

THE IRON AGE

A Review of the Hardware, Iron, Machine and Trades.

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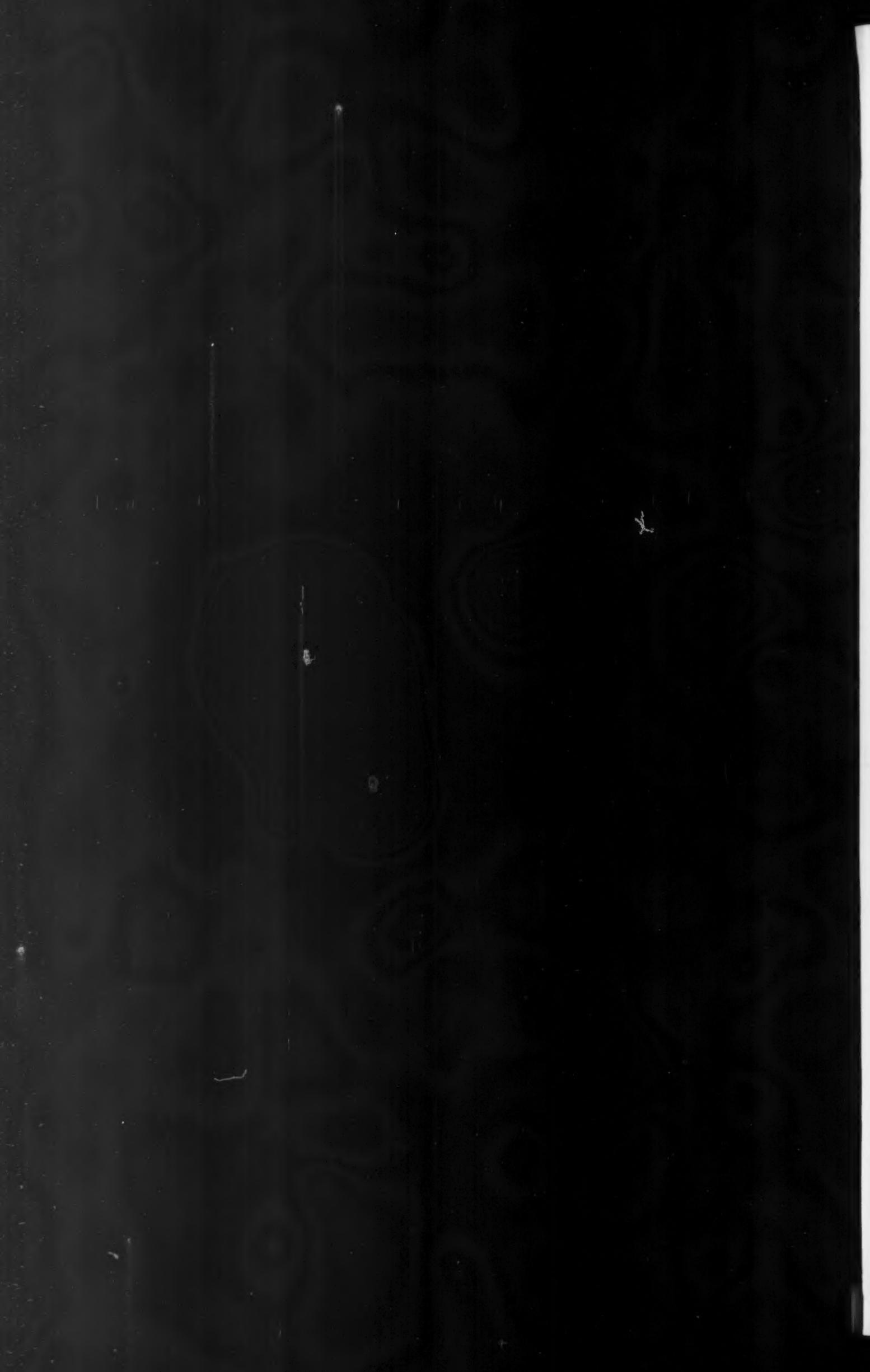
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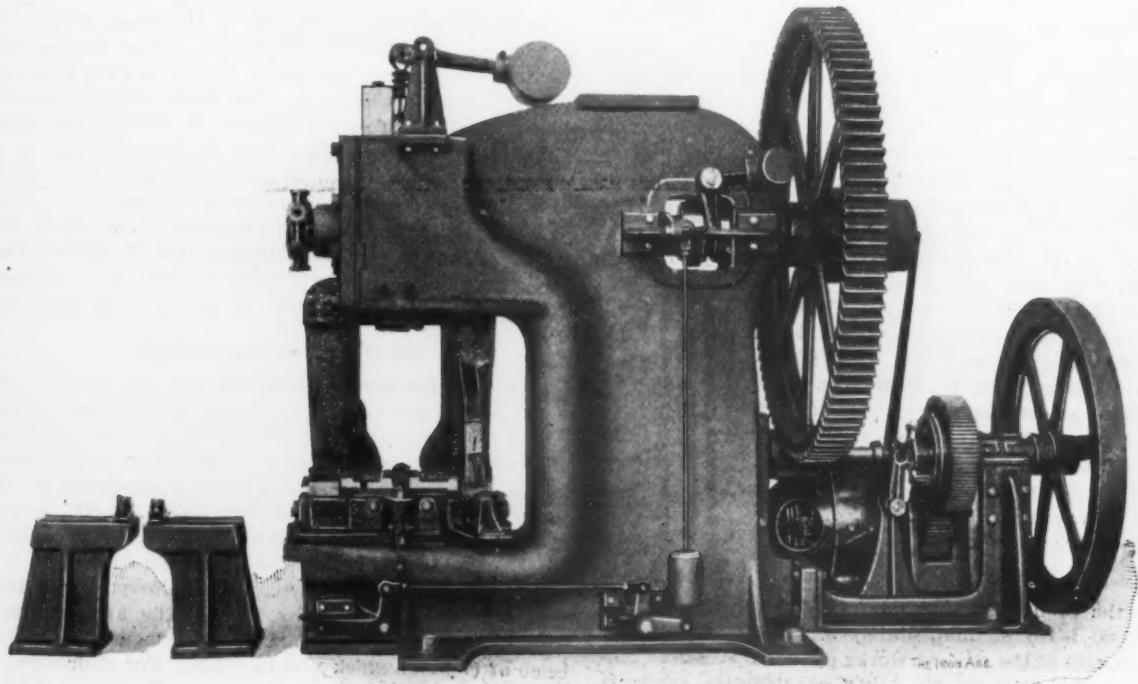
THURSDAY, MAY 2, 1901.

The Hilles & Jones Punch and Coping Machine.

The Hilles & Jones Company of Wilmington, Del., have designed a new punch and coping machine, as shown by the half-tone engraving. One special advantage of this design of coping attachment, which has been patented, is that the I-beam or channel to be coped can be passed through the upper knife holders and coped on both ends without turning the beam end for end. It is also possible to notch out a section of the flanges at any point or for the whole length of the beam, if desired. The sliding head, upper and lower knife holders and many other parts are of cast steel, and the knives are reversible with four cutting edges. The sliding head is controlled by an automatic stop, and in this machine power is transmitted from a direct connected electric motor through cut gearing. When desired the

the consolidation. In addition to plows, nearly all the companies interested make cultivators and harrows and a number make corn planters, seeders and other implements.

A New Engineering Field.—A Chicago enterprise of novel character, but evidently practical, is now in successful operation. The Illinois Maintenance Company, Marquette Building, undertake for a certain consideration to operate and maintain steam heating and electric lighting plants and electric, steam and hydraulic elevators, as well as inspect and repair electric motors in use anywhere in the city. They take the entire responsibility and burden of the mechanical operation of a building off the owners' hands, furnishing fuel, hiring engineers and firemen and keeping the plant in repair. They claim to be saving money for owners, and it is



THE HILLES & JONES PUNCH AND COPING MACHINE.

coping attachments may be entirely removed and the punch blocks substituted, the punches being controlled by gags, so that either or both can be used at the same time, as required. The punches and dies are adjustable from $2\frac{1}{2}$ to 24 inches, center to center, the depth of throat of the machine being 22 inches to the center of the sliding head. The capacity of the machine is equal to punching two holes 1 1-16 inch in diameter through 1-inch material, and will handle all sections of I-beams and channels from 6 to 24 inches.

The Plow Consolidation.—A consolidation of at least 20 of the leading plow manufacturers of the country was agreed upon at a meeting of the manufacturers in Chicago on April 22. It is expected that the combination will be completed in a few weeks and that the consolidated company will be able to begin business September 1. The capitalization will probably be \$50,000,000, but that has not yet been settled, nor has a name been selected. It is stated that the Moline Plow Company alone, among the great plow makers, will refuse to enter

certainly reasonable to believe that experts can conduct the steam and electric plants of office and commercial buildings more economically than men who know nothing about such matters and are obliged to rely on those whom they employ. The project originated with Edwin F. Cheney, now vice-president and general manager of the company, who is an electrical engineer of experience and high standing. The company have secured a number of contracts and find the plan meeting steadily with greater favor. They are adopting the policy of concentrating in one plant the heating of several adjacent buildings when such are placed under their management.

The annual report of Lud. Loewe & Co. of Berlin, the well-known makers of machine tools, shows that 691,994 marks were spent on further additions to equipment, practically completing the plant. Gross earnings amounted to 3,507,331 marks, as compared with 3,520,234 marks during the previous year. Out of the net earnings of 1,980,660 marks a dividend of 24 per cent. was paid, and 38,183 marks was carried forward.

The Allis-Chalmers Company.

Another consolidation is about to be effected, through Vermilye & Co., bankers, of this city, the particulars of which are not yet fully made public, although they have been somewhat freely discussed during the past few days in engineering trade circles. The new merger is to be known as the Allis-Chalmers Company, and will include the following concerns: E. P. Allis & Co., Chicago; Fraser & Chalmers, Chicago; Gates Iron Works, Chicago, and the Dickson Mfg. Company, Scranton. The locomotive works of the last named concern are not included. The valuations of the properties to be combined, made by Julian Kennedy of Pittsburgh, are as follows:

E. P. Allis Company.....	\$5,120,000
Fraser & Chalmers.....	3,205,000
Gates Iron Works.....	410,000
Dickson Mfg. Company.....	1,200,000
Total.....	\$9,935,000

This valuation is declared by Mr. Kennedy to represent land, buildings, machinery, tools, patterns, drawings, patents, &c., together with the cost of organizing and getting in full operation, but allowing nothing for good will. He reports that the shops are all running full, that their tools are comparatively new, and that all the works are in good condition and running smoothly. Confirming this favorable report, the E. P. Allis Company say that their business for the fiscal year ended with March 31, 1901, amounted to about \$5,400,000, and that owing to inadequate facilities they were compelled to refuse orders for work in which they have practically no competition for as much more. Fraser & Chalmers say that the amount of work turned out from their Chicago plant amounts to from \$2,750,000 to \$3,000,000 per annum, and that their profits for the 18 months ended with June 30, 1900, amounted to \$476,029.36. At the present time they have orders on hand for work to the value of \$1,400,000. They are of the opinion that if their facilities were increased they could do a very much greater business, and that this is assured for many years to come. The Dickson Mfg. Company make no statement of business or profits, and the Gates Iron Works say nothing for publication.

The assets of the Allis-Chalmers Company will consist of the following items:

Plants, as valued.....	\$9,935,000
Cash capital.....	10,000,000
Total.....	\$19,935,000

Of the cash capital above provided for the sum of \$2,500,000 is to be immediately expended in doubling the capacity of the present works of the E. P. Allis Company at Milwaukee. No other constructive work is mentioned as imminent.

CAPITALIZATION.

The organization of the Allis-Chalmers Company will be effected in New Jersey, with the following capitalization:

	Authorized.	Issued.
Preferred stock.....	\$25,000,000	\$16,250,000
Common stock.....	25,000,000	20,000,000
Total.....	\$50,000,000	\$36,250,000

Of the preferred stock, \$8,400,000 will be offered for public subscription at not less than 105 and accrued dividends, at the rate of 7 per cent. per annum from May 1. The remainder of the preference issue, \$7,850,000, is accepted by the original companies "in lieu of cash, in part payment for their properties at an aggregate amount less than the total valuation above stated." The preferred stock is made convertible into common stock, share for share, upon any first day of May until and including May 1, 1921, exclusive of any declared dividends.

Profit Estimates.

The general circular of the bankers handling this merger makes the following statements relative to present earnings and estimated profits:

"The accounts of the several concerns have been examined by chartered accountants, who certify that the

combined profits of these companies in each of the last two fiscal years, after making due allowance for depreciation and bad debts, but without charging interest and management salaries, exceeded the amount required to pay 7 per cent. dividends upon \$16,250,000 preferred stock, while for the last fiscal year the profits, as above defined, considerably exceeded such amount. The net profits for the fiscal year ending May 1, 1902, are estimated by the officials of the respective companies, without any allowance for increase of manufacturing capacity or for the economies of consolidation or increase of prices, at sufficient to pay dividends at the rate of 7 per cent. on the preferred stock and about 4 per cent. on the common stock. Including the economies of consolidation confidently anticipated, the net profits for the same period should exceed the amount needed to pay 7 per cent. on both classes of stock.

"The same officials similarly estimate that upon the completion of the additional Allis works, now in process of construction, the profits will be equivalent to 8 per cent. on the preferred stock and 10 per cent. on the common stock, with a material addition to the surplus account.

"It is proposed to commence the payment of regular dividends of 1 1/4 per cent. quarterly, upon the preferred stock on August 1, 1901."

Management.

It is proposed to take over the business of the several companies as of April 1 inst., under the management of the present officers of the E. P. Allis Company and of Fraser & Chalmers. The Board of Directors will be constituted as follows: Edward D. Adams, New York; Charles Allis, Milwaukee; Mart T. Cox, Orange, N. J.; James H. Eckles, Chicago; Elbert H. Gary, New York; William A. Read, New York; James Stilman, New York; William W. Allis, Milwaukee; Frank G. Bigelow, Milwaukee; W. J. Chalmers, Chicago; Wm. L. Elkins, Philadelphia; Henry W. Hoyt, Chicago; Max Pam, Chicago; Edwin Reynolds, Milwaukee; Cornelius Vanderbilt, New York.

The Organization Syndicate.

For the purpose of underwriting the scheme and guaranteeing the amount necessary to carry out the contracts for the purchase of the properties, the provision of working capital and the cash fund for the extension of the E. P. Allis Company's plant, a syndicate will be formed with a cash subscription of \$11,900,000, to purchase \$8,400,000 of preferred and \$13,000,000 of common stock. The syndicate will be under the control of Vermilye & Co., and will continue until November 1, 1902, unless sooner dissolved by them. The announcement contains the following significant statement: "No public issue of common stock will be made. For their services in publicly issuing the preferred stock and marketing the common stock, the managers are to receive one-fifth the net profits on sales made." This is not quite self explanatory. However, it is probably not intended to be.

Officers.

The officers announced for the first year are: Chairman Board of Directors, William W. Allis. President, Charles Allis.

Chairman Executive Committee, W. J. Chalmers.

Chairman Finance Committee, Wm. A. Read.

Treasurer, W. J. Chalmers.

General counsel, Max Pam.

Chief engineer, Edwin Reynolds.

The secretary and assistant treasurer and the comptroller are to be designated by the bankers in control of the syndicate.

The War Department is arranging for an early test of the 18-inch Gathmann torpedo gun in comparison with an army 12-inch service rifle. Each of the weapons will be tried against similar targets, representing the side construction of the latest type of battle ship, and consisting of a Kruppized armor plate, 12 inches thick and 8 x 16 feet in size. Congress appropriated \$55,000 for the expenses of the test.

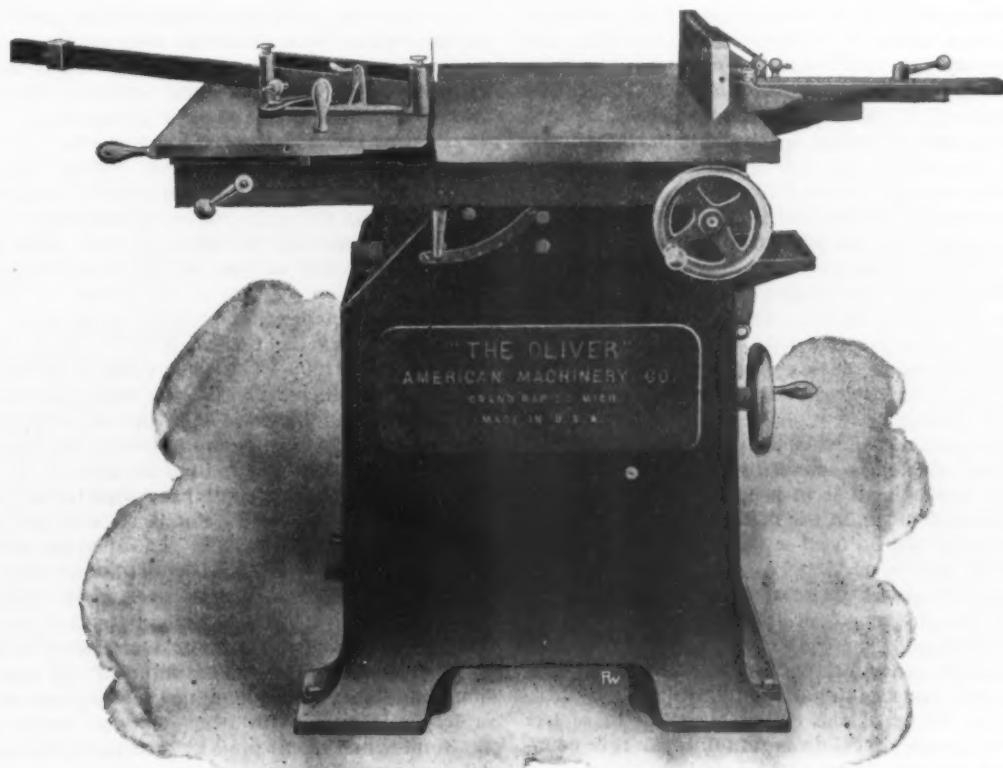
The Oliver Universal Saw Bench.

The American Machinery Company, Grand Rapids, Mich., have brought out the universal saw bench, here illustrated. It is specially designed for the use of pattern makers and others who need a device enabling them to saw by power at any angle. The top is 36 x 44 inches, divided in two sections, a sliding table 16 inches wide and the stationary part 20 inches wide, with a further extension of 8 inches to facilitate the use of the guide or fence over the entire width of the table. The whole top may be tilted and operated in all its detail at any angle between the square, 90 degrees, and the miter, 45 degrees, by simply turning a hand wheel which operates a carefully adjusted worm and worm wheel, and is securely held in any position without either tightening or loosening any bolts or nuts. Perfect alignment can always be maintained to compensate for wear of the arbor bearings. A dial, which is easily read while work-

left hand to a miter (viz., 45 degrees, and its complement, or 225 degrees). An auxiliary gauge may be attached to the fence upon which slides a stop, regulating the length where several pieces are required.

The splitting fence takes up to 17 inches wide, adjusts from square to miter parallel with the saw, or can be set and firmly secured at any angle not in line with the saw on either the sliding table or stationary portion of the top, by simply using one of its two plugs as a center pin. This permits the use of the periphery of the saw to cut semicircular core boxes of any size. This fence is also provided with an attachment which may be secured to its face to facilitate the handling of short pieces; with it in use the work does not have to be pushed clear and beyond the saw. The base or frame is massive, 30 x 40 inches on the floor, very heavily ribbed with brackets, and bosses all cast on solid. The arbor yoke hole is 6½ inches diameter, and the side bearings 2 inches wide.

The yoke carrying the two saw arbors is cast together



THE OLIVER UNIVERSAL SAW BENCH.

ing the tilting device, indicates the exact degree of pitch attained. The sliding table moves on roller bearings, giving an easy movement free from friction, is accurately graduated, and either the cut off, or miter gauge, or splitting fence can be located, by means of a taper plug, instantly on all the prominent angles, such as triangle, miter, hexagon, octagon, or square, on both acute and obtuse angles (viz., inside and outside angles from 30 to 135 degrees). The table is graduated in duplicate, one series of graduations for small work near its center and another series at the extreme end for larger work. The throat between the tables can be adjusted from the thickness of the saw up to 2 inches. This is arranged by a suitable mechanism and can be securely locked in position. This permits the use of cutter heads, &c.

The semicircular rockers which connect the top to the base are 9 inches in diameter, suitably tongued and grooved together, iron to iron, and having a large amount of bearing surface. It is furnished with two guides or fences—miter cut off and splitting fence—up to 36 inches wide, can be set to cut any degree between 30 and 135 degrees, and with its extension it cuts both right and

with the large worm wheel in one piece. The end passing through the yoke hole in the base is fitted and threaded on its outer end and held so that it may be revolved by the hand wheel. The necessary friction is regulated and maintained by the large threaded cap which draws all the parts together and locks when the desired amount of friction is obtained. The opposite end of the yoke is provided with a steady plug, which may be removed when saws larger than 14 inches diameter are used. The saw arbors are of crucible spindle steel, 1 3-16 inches in diameter. One arbor is extra long between collars to admit dado heads or other cutters. The bearings are exceptionally long; capillary attraction supplies oil from oil wells cast in the arbor yoke.

An idler jack is a necessity when the machine is to be belted from the same floor upon which it stands. It is inclosed in the frame and by its own weight adjusts the tension on the belt. The idler pulleys, 6 x 6 inches, are bushed with bronze, and both pulleys and bushing may revolve around shaft, or the pulley revolve around the bushing at will.

The height of the machine is 36 inches from floor and its weight is 1800 pounds.

The Coke Industry in the United States.

The Census Report by E. W. Parker.

WASHINGTON, D. C., April 30, 1901.—The Census Office is about to issue its report upon the industry of coke manufacture, which will possess a special interest in that it is the first bulletin of the twelfth census of interest to the iron and steel trade to make its appearance. It has been compiled by E. W. Parker of the United States Geological Survey and an advance summary is herewith presented through the courtesy of S. N. D. North, chief statistician. In submitting the report to the Director of the Census Mr. North says:

"The manufacture of coke is a comparatively new industry in the United States. While coke was used to some extent for refining iron as early as 1817 its use in any considerable quantities in blast furnaces did not begin until about 1840. Coke does not appear, however, in the census returns of manufactures until 1850, the very small amount returned for that year being all credited to the State of Pennsylvania. Prior to that census, coke was probably returned as coal. The value of the coke produced was returned as \$15,250 in 1850, \$189,844 in 1860, \$1,132,386 in 1870, \$5,359,489 in 1880, \$16,498,345 in 1889, including by-products to the value of \$3891, and the value of the product in 1899 is shown by this bulletin to have been \$35,585,445, including by-products amounting to \$952,027 in value. This value is limited to the product obtained from the distillation or combustion of bituminous coal in retorts, ovens or pits and does not include the ordinary gas house coke obtained as a by-product in the manufacture of illuminating gas from coal. The quantity of coke obtained by the latter process is decreasing every year, owing to the increasing use of electricity for lighting purposes and of water gas for coal gas.

"The extraordinary development of the coke manufacture as an industry is shown by the statistics above given. This development is in keeping with the growth of the iron manufacture, in the metallurgy of which few bituminous coals can be used without having first been coked. At the census of 1880 77.3 per cent. of the coke manufactured in the census year was consumed in blast furnaces, and at the census of 1890 this percentage had increased to 92.3. The percentage so consumed in 1899 will appear in the report on the iron manufacture."

Mr. Parker's report is in part as follows:

"Since the taking of the eleventh census there has been a development of coke manufacture in this country for which no comparison can be made with previous censuses. This is the introduction of the retort or by-product coke oven, whereby the volatile constituents of the coal, other than gases consumed in the distillation process, are recovered. These constituents are wasted in ordinary beehive ovens. Three classes of by-product ovens—the Semet-Solvay, the Otto-Hoffman and the Newton-Chambers—are now in successful operation in the United States. The first and second are retort ovens, the coal being distilled in a chamber heated from flues in which the gas obtained from the coal is burned. The process of coking is a distillation, rather than a combustion of the coal. The Newton-Chambers are beehive ovens with apparatus for recovering the tar and ammonia contents of the coal, but consuming the gas during the process. In some instances these by-product ovens make gases their primary product and coke their secondary product, but even then the coke produced is suitable for metallurgical purposes, and as no exact separation of the metallurgical and domestic coke is possible the production from all the by-product coke ovens is considered in this report. The first ovens of the by-product class to be constructed in the United States were built at Syracuse, N. Y. They were completed in 1893, and produced in that year 12,850 short tons of metallurgical coke. At the close of 1899 the number of by-product ovens in existence in the United States was 1020, and the amount of coke produced by them amounted to 906,534 short tons.

The Product.

"The total product of coke in 1899 from all the ovens included in this report amounted to 19,640,798 short tons, valued at \$34,633,418, as compared with an output of 10,008,475 short tons, valued at \$5,359,489, in 1880. The output in 1899 increased 9,632,629 tons, or 96.2 per cent., over that of 1889 and was more than seven times that of 1880. The value of the coke produced in 1899, as compared with that of 1889, shows an increase of 110 per cent., and, as compared with 1880, an increase of 546.2 per cent. The average price per ton obtained in 1899 was 11 cents (or 6.7 per cent.) higher than that obtained ten years before, but 19 cents (or 10.8 per cent.) less than that obtained in 1880. The increase in the productive capacity of the ovens now in use, as compared with those in the earlier censuses, is shown in the fact that the average yield of coke per oven in 1899 was 417 short tons, while in 1889 it was 306 tons and in 1880 283 tons. While the production has increased 96.2 per cent., the number of active ovens has increased only 44.3 per cent.

The Yield.

"There has been an increase in the percentage yield of the coal in coke. This has been partly due to the introduction of the by-product ovens, which yield a larger percentage of coke than the ordinary beehive ovens, partly to improved practice in manipulation of the beehive ovens and partly to the preparation of the coal itself, by washing or otherwise, before being charged into the ovens. In 1889 the amount of coal washed, as shown by the eleventh census, before being charged into the coke ovens was 968,329 short tons, whereas in 1899 the total amount of coal washed was 4,276,517 short tons.

"The present tendency toward large industries under one management is illustrated in the statistics of coke production in 1899. The total number of tons of coke produced has increased 96.2 per cent., and the value of all products has increased 115.7 per cent., while the number of active establishments reporting for 1899 was only 23, or 10.6 per cent., more than the number reporting for 1889. The amount of capital invested in the industry in 1899 was \$36,502,679, as compared with \$17,462,729 in 1889, and \$4,769,858 in 1880. The increase of capital in 1899 over 1889 was \$19,039,950, or 109 per cent. As compared with 1880 the capital invested in 1899 increased 665.3 per cent. The total amount paid in salaries and wages increased from \$4,186,264 in 1889 to \$7,883,032 in 1899, or 88.3 per cent. The value of the coal tar, ammonia and surplus gas obtained as by-products in retort or by-product ovens in 1899 amounted to \$952,027, and the total value of all products for that year to \$35,585,445.

"The coking industry is usually carried on in direct connection with coal mining; in some instance the entire product of the mines, with the exception of coal used at the works or consumed by employees, is charged into ovens. In the preparation of this report the mining of the coal used for coke has been considered as a separate industry and has not been included. Its value includes the cost of mining, but this is not stated in the wages or other expenses connected with the coking operations. In a few cases the coal is transported to a distant point and there made into coke, one instance being in Wisconsin, where the coke is made from coal mined in the Connellsville region of Pennsylvania.

"In cases where all the coal mined is charged into the ovens the value assigned to it is based either upon the average selling value of coal in the same district, or upon the cost of production plus a percentage of profit on the mining operations. Where coke is produced by proprietors of blast furnaces, &c., for consumption in their own furnaces, none being sold, the value assigned to it is based upon the average for the vicinity or upon the cost of production plus a percentage of profit on the coking operations.

The Ovens.

"The following figures give the total number of ovens by States: Alabama, 5206; Colorado, 1221; Georgia, 350; Indiana, 12; Indian Territory, 130; Kansas, 86; Kentucky, 200; Massachusetts, 400; Missouri, 12; Montana, 203;

New Mexico, 114; New York, 25; Ohio, 235; Pennsylvania, 26,920; Tennessee, 1727; Utah, 104; Virginia, 1588; Washington, 90; West Virginia, 8231; Wisconsin, 120; Wyoming, 781.

"The total number of ovens has increased in Alabama from 3093 in 1889 to 5206 in 1899, and in Pennsylvania from 21,404 in 1889 to 26,920 in 1899. The average number of ovens to an establishment in Alabama in 1889 was 194; in 1899 it was 347, or nearly double the number in 1889. In Pennsylvania the average of ovens to an establishment in 1889 was 218, and in 1899 it was 302. For the entire United States the average number of ovens to an establishment increased from 150 in 1889 to 196 in 1899."

"By far the greater portion of the coke manufactured in the United States is made in the ordinary beehive ovens, of which there were 45,680 out of a total of 47,142 active ovens reported for 1899; and 32,129 out of a total of 32,659 reported for 1889. In 1880 and 1889, coke was reported as made in pits or mounds, these being used principally for experimental purposes. In later years, however, it has been considered better practice to have the coal shipped, in some cases long distances, to points where the experiments can be made in either beehive or by-product ovens, in order that better information may be secured as to the oven most suitable for the manufacture of coke from that particular coal. For this reason we find that no pits or mounds are reported for 1899. The Belgian or flue ovens, reported separately in 1880 and 1889, are included among 'other styles' in 1899. No by-product ovens were in use ten years ago, whereas 1020 ovens of this type were operated in 1899 and produced 906,534 tons of coke.

Consumption of Coal.

"The following figures show the total consumption of coal in the manufacture of coke in the United States by States: Alabama, 3,028,472 short tons; Colorado, 817,725 tons; Kansas, 26,988 tons; Kentucky, 151,503 tons; Missouri, 5320 tons; Ohio, 142,678 tons; Pennsylvania, 19,490,030 tons; Tennessee, 684,821 tons; Virginia, 994,635 tons; West Virginia, 3,792,825 tons; all other States and Territories, 1,022,832 tons; the United States, 30,157,829 tons, valued at \$18,355,252.

"The principal item of expense in the manufacture of coke is the cost of the coal charged into the ovens, this being the only raw material used. The value of the coal consumed is its value at the ovens, whether mined in the immediate vicinity or transported from a distance. The coal, which is crushed or washed before coking, is taken at its value after being prepared. The amount of coal used has increased 90.9 per cent., whereas its value has increased only 65.2 per cent. in the last decade. This difference has been due in great part to improvements in mining machinery and methods and in underground haulage, which have decreased the cost of production.

"Of the coal used in the manufacture of coke in the United States during 1899, 74 per cent. was run of mine and 93.5 per cent. of this mine run was unwashed. Practically all the coal used in the Connellsville region of Pennsylvania (52.9 per cent. of the entire coke product of the United States) is unwashed run of mine, the coal being charged directly from the mine without preparation into the ovens. Of the total amount of coal used in 1899 26 per cent. was slack, and of the slack coal used 35.9 per cent. was washed. There has been a notable increase in the amount of slack coal washed before coking. The amount of unwashed slack coal used in 1899 was 57.6 per cent. more than that used in 1889, whereas the amount of washed slack used in 1899 was over five times as much as that used ten years before, or an increase of 415 per cent.

"The product of coke by States was as follows: Pennsylvania, 13,245,594 tons; West Virginia, 2,278,679; Alabama, 1,787,809; Virginia, 618,707; Colorado, 503,543; Tennessee, 380,525; Massachusetts, 330,770; Ohio, 83,878; Kentucky, 81,095; Montana, 56,376; Georgia, 50,907; New Mexico, 44,134; Wisconsin, 33,437; Washington, 30,372; New York, 28,416; Utah, 26,881; Indian Territory,

24,339; Wyoming, 15,630; Kansas, 14,476; Missouri, 2860; Indiana, 2105; Illinois, 265; the United States, 19,640,798."

W. L. C.

The Cuban Tariff.

WASHINGTON, D. C., April 30, 1901.—The Insular Division of the War Department is advised that the Cuban Tariff Commission closed its public hearings on the 20th inst., and has decided to receive no more representations, either written or oral, concerning changes in the present tariff. It is anticipated that the commission will not occupy more than 30 days in the consideration of the schedules, and that the tentative revision will reach the Department before June 1. In that event a special effort will be made to promulgate the new schedules on June 1, so that after a month's notice they may take effect with the beginning of the new fiscal year.

Sugar Machinery.

Very few changes have been suggested to the War Department, but a number of important recommendations have been forwarded by manufacturers and exporters direct to the commission in Havana. The Spanish importers in the island are paying very little attention to the subject, and the burden of the work of securing changes has fallen upon the American producer and shipper. The attention of the Tariff Commission has been drawn to a number of recommendations that have been made from time to time with regard to changes in the iron and steel schedule, and these will be considered collectively, with a view to making this schedule as consistent as possible without unduly reducing the amount of revenue to be derived. The sugar interests in Cuba are very anxious that sugar making machinery shall be placed on the free list, and representations to this effect have been made from time to time since the island first came into the control of the United States. The present duty, however, is only 10 per cent. ad valorem, and is regarded as a necessary factor in the general financial scheme of the tariff. This rate of duty is also defended on the ground that all so-called agricultural implements are now on the free list, where it is proposed to leave them. The fact that a great deal of American capital is being invested in sugar lands in the island indicates that there will probably be much pressure to put sugar making machinery on the free list, but the War Department announces that the revenue producing power of the tariff will be the first consideration.

Structural Steel.

A reduction in the rates on structural iron and steel is greatly desired, especially by the sugar interests, as all modern plants are being built of iron and steel to prevent destruction by fire, and because of the economy secured in the long run. The present rate on structural iron and steel is \$18 per metric ton, and upon corrugated iron and steel \$13 per metric ton. It is claimed that these rates are so high as to make it impossible for planters of moderate means to put up iron or steel buildings, as the cost, f.o.b. New York, ranges from \$20,000 to \$100,000 each.

Cast Iron Pipe.

Several efforts have been made during the occupation of the island by the United States to secure a substantial reduction in the duty on cast iron pipe, which is very necessary to the rehabilitation of the industries of the island, to public and private sanitation, &c. When the present tariff took effect, the value of cast iron pipe was said to be about \$15 to \$17 per ton of 2240 pounds. The duty is \$5 per ton, which is claimed to be too high an ad valorem on such an article. The point is also made that the difference in the duty between pig iron and cast iron pipe is \$4 per ton, which, it is said, is a much larger proportion of the cost of making pipe than the difference of wages and materials in the United States and Cuba. Several American producers of pig iron have sought to have it admitted free of duty into both Cuba and Porto Rico on the ground that cheap pig iron is important to the development of those islands.

Wire Products.

A material reduction is desired in the present rates on wire, which range from \$10 to \$16 per metric ton. The American Steel & Wire Company have been active in this movement and insist that barb wire, woven fence, fence staples, all kinds of iron and steel plain wire, wire nails, wire rods, chains, teaks, rivets, &c., should be admitted into Cuba at the lowest possible rates of duty. Such articles as fencing wire are claimed to be absolute necessities to all planters and farmers, and hence the duties should be very light.

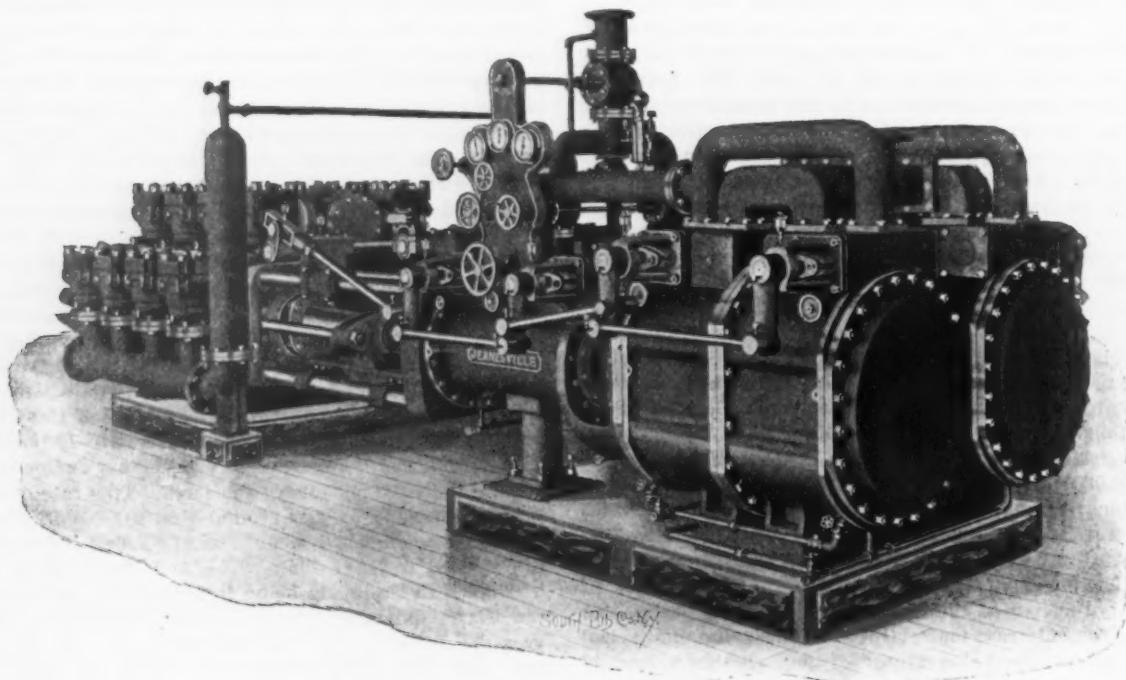
Cuban Iron Ore.

The suggestion has been made by a variety of interests that Cuban iron ore should be admitted into the United States free of duty; but this is a subject which cannot be treated by the Tariff Commission. It has been informally considered by War Department officials in connection with the representations that have been made by the Cuban commissioners, who have visited

can be maintained. At present, therefore, the only way that a reduction in the tariff on Cuban ores could be secured would be through the amendment of the Dingley act, which would have to apply to the products of all countries. The institution of a civil government in the island and the withdrawal of the American authorities would make possible the negotiation of any desired convention, and much interest therefore attaches to the outlook for the acceptance of the so-called Platt amendment by the Cuban constitutional convention. It is believed that the visit of the Cuban commissioners has greatly improved the outlook for the ultimate acceptance of the conditions imposed by Congress, although it is probable that American control will not be surrendered until after the meeting of Congress. W. L. C.

The Jeanesville Mine Pumping Engine.

The compound condensing duplex mine pump built by the Jeanesville Iron Works Company of Jeanesville,



THE JEANESVILLE MINE PUMPING ENGINE.

Washington during the past week and who have urged the Administration authorities to recommend to Congress such legislation as will enable Cuban sugar, tobacco and iron ore to be imported at materially reduced rates. Of course it will be impossible to make a tariff discrimination in favor of Cuba by direct legislation, but the commissioners hope to secure the end in view either by reductions in the general tariff or by the negotiation of a reciprocity arrangement. Up to the time of the breaking out of the Spanish war, the Santiago iron ore mines in 14 years had produced 3,443,444 tons, the larger part of which was shipped to the United States, paying in the aggregate more than \$2,000,000 in import duties. The mines are said to represent an investment of American capital amounting to about \$8,000,000. A reciprocity convention providing for the free entry of Cuban ores into the United States in exchange for lower duties on certain American exports to Cuba might have considerable strength, but if coupled with reduced rates on Cuban tobacco and sugar would encounter very strong opposition from American agricultural interests.

The question of the form of government to be enjoyed by the island of Cuba in the near future is an important one which has a direct bearing upon the negotiation of reciprocal trade agreements, for the reason that under the terms of the treaty of Paris, as long as the island is under the control of the United States no tariff rates discriminating in favor of this country

Pa., is capable of a duty of from 70,000,000 to 75,000,000. Both the high and low pressure cylinders are cast on end of hard close grained iron, with extra thickness for reborning. They are arranged in tandem with the high-pressure inboard and connected by heavy circular cradles. The low pressure cylinders are supported by bed plates which tie the two sides of the pump together, and the high pressure cylinders with adjustable columns resting on sole plates. The high pressure cylinders are fitted with cushion valves, Fig. 4, which permit the operator to adjust and control the stroke. The low pressure cylinders and their heads are fitted with a jacket. Live steam is circulated through this jacket and serves to maintain a better steam condition therein, by preventing condensation. The jacketing is of great benefit when the pump is operated at slow speed, but as the work increases the saving is somewhat reduced. Both the high and low pressure cylinders are fitted with Corliss valves. The engine is supplied with three throttle valves, one supplementary to each high pressure cylinder and one main valve to the inlet. This admits of controlling independently the working of each side of the engine. Each cylinder is fitted with a hollow cored and faced piston with cast iron packing rings sprung in. A connection and valve are provided for admitting live steam into the low pressure cylinders when desired. A valve and connection are also furnished to equalize the exhaust from the high pressure cylinders to produce full stroke, when

It is desired to run the pump at a very slow speed. For convenience in operation there is located on the high pressure cylinders a substantial cast iron gauge board, which serves the purpose of holding the steam, vacuum

dition of the various speeds, the links are made adjustable so that the operator can change the valve travel when the engine is in motion. The rocker shafts are steel and work upon long babbitt half boxes, and the arms are keyed to the shaft and connected to the plunger crossheads by links. The high pressure cylinders can be fitted with an adjustable cut off, whereby the steam may be cut off at any desired point up to half stroke.

There are four separate water cylinders with inside ends cast solid, made male and female without center flanges. Each cylinder contains the long packing box, suction chamber flange on the side and discharge chamber flanges on top. There are eight suction and eight discharge chambers, Fig. 2, on the large pumps, which contain the working valves. The valve proper is fitted with a bevel renewable seat, and works upon a bronze seating. There are wings set upon the working valve, which are set at an angle, so that every beat is turned to a new seat. The water passages are very direct and large, and the working area through the valve is approximately from 50 to 75 per cent. of the plunger area, de-

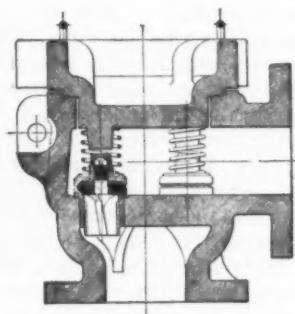


Fig. 2.—Section through Pressure Pump Chamber.

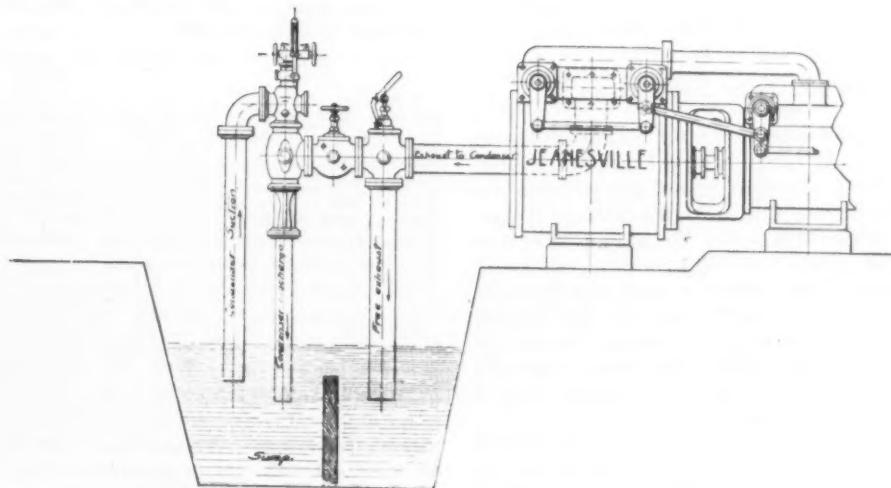


Fig. 3.—Suction and Condenser.

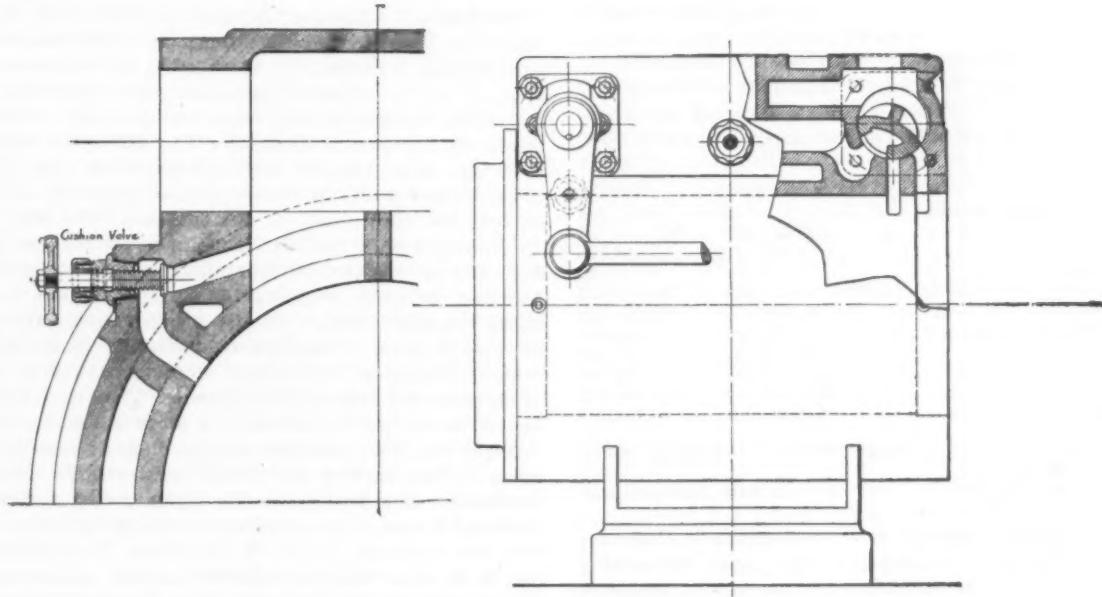


Fig. 4.—Section Cylinder.

THE JEANESVILLE MINE PUMPING ENGINE.

and water gauges, and also hand wheels which operate the several valves connected with the engine. The steam valves are operated by the regulation duplex movement, in which the working plunger on one side operates the controlling valve on the other side of the engine. In order to adjust these valves to meet the con-

ditions upon the speed at which the pump is run. The four plungers are connected in pairs, trombone style, by cold rolled parallel rods. All the plungers are supported on the outboard end by adjustable slippers fitted to the plunger cross head and running in double guides forming a drip pan between the guides and catching the drip

from the plungers. There is a distance block on the front plungers permitting their removal without taking out the piston rod. At the dead end of the side suction pipe is placed a large vacuum chamber, which compensates for the irregularity of the pump action. The steam inlet is provided with a separator which requires no trap, and in case of a flood of water it has such large opening and acts so quickly that none reaches the working cylinder. The condenser is an important accession to a pump of this type. In mine use, where the hot water from the condenser cannot be returned to the boilers, it follows that all the live steam used for a condensing apparatus is lost. To this end a special induction exhaust condenser is used. This is directly connected to the exhaust of the main pump, Fig. 3, and is placed as near the water in the sump is possible. The condenser is first primed either by water from the column or live steam, but when once started the energy in the exhaust steam alone is sufficient to maintain the full vacuum. The steam coming in contact with the cold water is condensed, and forms a vacuum which gives a high velocity of discharge, thereby making the vacuum continuous. The entire steam end of the pump is covered with a non-conducting material held in position by iron lagging.

Petroleum Refining Statistics.

S. N. D. North, chief statistician for manufactures in the eleventh census, has issued a report on the industry of petroleum refining, prepared under his direction by Edward W. Parker of the United States Geological Survey and expert in the division of manufactures of the Census Office. The period covered by the report is the calendar year 1899. The statistics presented embrace the operations of every establishment in the United States engaged in refining crude petroleum. Establishments which purchase refined or partly refined oils and mix or compound them with vegetable, animal or other mineral oils for special purposes are not considered.

The statistics of petroleum refining at the present census show that while the value of the product has increased 45.8 per cent. over that of 1889, there has been a decrease in the number of establishments and the number of refineries. The reduction in the number of establishments has been due partly to consolidation of independent concerns under one management and partly to the abandonment and dismantling of a few comparatively small establishments, both being the natural result of the present tendency in industrial conditions.

The principal features of the statistics of petroleum refining in 1899 and 1889 are summarized in the following table:

Items—	1899.	1889.
Number of establishments.....	*67	†94
Capital	\$95,327,892	\$77,416,296
Land	8,166,032	7,886,668
Buildings	6,502,182	6,403,994
Machinery, tools and implements.	39,565,389	20,837,038
Live capital.....	41,004,280	42,288,596
Average number wage earners.....	12,190	11,403
Total wages.....	\$6,717,057	\$5,872,467
Miscellaneous expenses.....	3,330,851	2,069,288
Cost of materials.....	102,859,341	67,918,723
Value of products.....	123,929,384	85,001,198

* Exclusive of two idle establishments with aggregate capital amounting to \$90,000.

† Exclusive of seven idle establishments with aggregate capital amounting to \$423,508.

The aggregate capital shows an increase in 1899 over 1889 of \$17,911,596, or 23.1 per cent. The noteworthy increase is in the capital invested in machinery, tools and implements, this portion of the capital showing an increase of \$18,728,351. The average capital per establishment in 1889 was \$317,741; in 1899 it was \$823,578 and in 1899 it was \$1,422,804, a rise illustrating clearly the effect of the consolidations which have taken place during the last decade. These figures represent not the capital stock of the corporations engaged in the industry, but the value of the plants together with the live or working capital.

It is interesting to note that while the total capital in 1899 shows an increase of 23.1 per cent. over 1889, and the value of the products an increase of 45.8 per cent.,

the cost of materials increased 51.4 per cent. The prices of crude petroleum in 1899 were higher than in 1889, while the values of refined products, particularly illuminating oils, were generally lower. Of the 42,234,664 barrels of refined petroleum produced in 1899, not less than 16,636,809 barrels, or nearly 40 per cent., were exported to foreign markets.

The petroleum refining industry for 1899 is confined to 12 States, and in seven there are only one or two refineries. The number of refineries in each of these States is as follows: California, 4; New Jersey, 6; New York, 9; Ohio, 9, and Pennsylvania, 39. Colorado has two refineries, while Texas, West Virginia, Indiana, Kansas, Maryland and Michigan have one each. The number of refineries in Pennsylvania has decreased from 58 in 1889 to 39 in 1899; those in New York, from 16 to 9; in Ohio, from 15 to 9; in Maryland, from 3 to 1. The total number of refineries in the United States is shown to have decreased from 106 to 75, a loss of 31. Part of this decrease has been due to the consolidation of two or more refineries.

The following table gives a comparative summary of the class, quantity and value of the refined petroleum produced in 1899 and 1889:

	1899.	
Products.	Number barrels.	Total value.*
Burning oils.....	31,266,513	\$82,244,061
Residuum	596,615	688,455
Paraffin oils	1,606,783	3,987,087
Paraffin wax	774,924	7,791,149
Reduced oils.....	1,766,090	7,108,168
Naphtha and gasoline.....	5,615,554	15,991,742
Neutral filtered oils.....	608,185	2,256,626
All other products.....		3,861,246

	1889.	
Products.	Number barrels.	Total value.*
Burning oils.....	16,967,397	\$47,842,587
Residuum	1,194,967	1,235,490
Paraffin oils.....	684,840	3,022,048
Paraffin wax.....	241,951	2,904,902
Reduced oils.....	856,730	2,333,923
Naphtha and gasoline.....	3,290,462	7,115,388
All other products.....		20,546,910

* The cost of packages is included in the values reported for 1899, but it was not uniformly included in the reports for prior censuses.

Stephens, Adamson & Co.—A new firm, styled Stephens, Adamson & Co., engineers and machinists, are erecting a factory at Aurora, Ill., for the manufacture of power transmitting machinery, elevating and conveying appliances and sheet metal work. It will be ready for occupancy about May 15. The main building is 80 feet wide, 112 feet long and one story high, with a deck 40 feet wide, in which will be installed a 10-ton electric traveling crane of 40 foot-span. The shop will be equipped with the best machinery for the manufacture of power transmitting appliances, such as pulleys, shafting, hangers, couplings and a special line of ring oiling bearings. They will also pay particular attention to manila rope transmission, including sheaves and tension carriages, and will manufacture various kinds of elevator and conveying appliances. They have already booked some orders, and have a large amount of work in sight that they can put into the shop as soon as it is ready. The factory is located between the Chicago, Burlington & Quincy and the Elgin, Joliet & Eastern Railroad tracks, with excellent switching facilities. The firm are composed of W. W. Stephens, F. G. Adamson and W. E. Bee. Messrs. Stephens and Bee were formerly connected with the Webster Mfg. Company, and Mr. Adamson was with the J. S. Metcalf Company, both of Chicago.

State Mine Inspector J. de B. Hooper of Alabama has issued his official report of the production of the coal mines of that State in 1900, which places the total output for the year at 8,273,362 tons, as against 7,484,773 tons in 1899 and 6,466,741 tons in 1898. In 1889 the coal production of Alabama was only 3,572,893 tons. The production during 1901 is expected to exceed 10,000,000 tons, provided there is no cessation of work at the mines.

Japan, Our Latest and Greatest Rival for Commercial Supremacy in the Far East.—I.

BY ALEXANDER HUME FORD.

Almost until the close of the last century Japan was looked upon as our commercial doorway to Asia. The dawning of the new era, however, finds her one of the powers, admitted to full fellowship, and the rival of America in the Far East, her exports to China fully equal in value to our own, with every probability, so claim the Japanese manufacturers at any rate, that we will soon be left far behind in the race for the commercial conquest of the yellow continent.

Stopping in Japan during the exciting period of her transition from a ward of, to one of the great powers herself, I was forcibly struck with the supine reliance of the people that foreign capital was to pour in to enrich all.

Coolies demanded more for their labor, and hotels doubled their rates. Living became almost as expensive as in the States. After a year of unprecedented prosperity the reaction came. Banks began to fail, and the expected inflow of foreign capital failed to materialize.

The people began to take a true perspective of the new conditions, and to adapt themselves accordingly. Values are now coming down to a proper level, while the native manufacturers who have invested millions in new industries realize that the policy of the nation must be henceforth to gain for Japanese products the markets of the Asiatic Continent, and from the very start the war in China has wisely enough been carried on, so far as Japan is concerned, with a view to future peaceful operations for the commercial conquest of that vast market. Perfectly aware that the presence in China of the allied forces is rapidly deteriorating the value of one of their most promising markets, Japan hopes by a policy of reconciliation and gentleness to gain for herself all that is left worth having. After her first show of power Japan extended a protecting arm over the helpless Chinese, with the result that to-day more than three-fourths of the population of Peking is still crowded in the quarter policed by the Japanese soldiers, while the balance are seeking protection of the Americans, the other sections of the city being absolutely abandoned to the French, German and Russian soldiery.

Japan and America to-day stand highest with the Chinese authorities, and when once more peace is restored and concession grabbing begins again, it is confidently expected that in self-protection China will entrust the most valuable to the two rival nations that have done most to lighten her burden in time of trouble.

The war has already taught the nations that although the Japanese may not be inventors they are certainly wonderful mechanical modifiers and adapters. Alone of all nations they have built a perfectly fitted Red Cross ship. European ambulances and horse artillery have sunk in the mud of China, but the light Japanese ordnance on ricksha-like vehicles has always been in condition to be rushed to the front by man power. We still feed the troops at Port Arthur and in other parts of Northern China, but Japan, both in war and peace, is teaching us mechanical tricks which we will do well to profit by.

Japan Sends Us Watches.

We send thousands of cheap watches to China monthly; Japan imitates them and exports the product to us. Now she is preparing to place Chinese word-signs on the faces of her watches and symbolical characters on the backs, to compete with us in the Orient. We use our machinery to imitate Japanese ware, underselling the Japanese in their own market, but of late they have imported some of our special machinery, and now, for instance, instead of buying her cigar boxes from us she offers to pay the duty, export them to us and sell at a profit in our home market. At one time Japan imported much of our machinery merely to imitate its manufacture; latterly her students, who invariably rank high in

our technical schools, merely send drawings from America; in fact, so notorious has this become that some of our largest steel plants no longer permit visitors within their gates.

Japan having just completed her new large steel plant is more confident of her powers than ever. Now she can import sample orders of our heaviest pieces of machinery from which to make molds for castings to compete with us throughout Asia. In Tokyo the ponderous plant of the new city water works has just been installed by Japanese workmen, and engineers, who expect in future to build for other cities from this model.

With coal at tidewater and iron just across the straits in Korea and China, it is no wonder that thousands of tons of American pig iron, after being shipped as ballast to Japan, was years later returned to this country to be sold on a rise in the market.

While Japan is now a large purchaser of our electrical goods, having fully equipped trolley lines in her larger cities, and electric light plants in even small villages, she hopes before long to manufacture her own supplies. Small electric factories springing up all over the country encourage this hope. However, it will probably be some time before Japan will be able to compete with us in this our specialty, in Asia.

To those who best know the progressive little people it seems a foregone conclusion that Japan will spend her share of the Boxer indemnity even more liberally in America for plant machinery than she did her former Chinese indemnity fund, not yet totally dissipated.

In fact, fully one-fourth of the money Japan spends in America is for plant and other machinery, helpful in making her self supporting and independent of the manufacturing nations she hopes in time to rival. The great industrial revival which followed the Japan-Chinese war is more than likely to be repeated, but on a larger scale, although at present Japan is suffering from the inevitable business depression which naturally follows the reckless speculation of the past six years. A decade ago Japan was dependent on the powers; now she builds her own ships, casts cannon, manufactures arms, produces oil that competes with the American article in the Far East, invades our cotton goods market in China, establishes commercial museums in Asia, where all may see working models and buy at a minimum price, including low freight rates on Japanese ships.

In fact, the opening days of the new century disclose the startling fact that it is no longer England, but Japan, threatening American commercial supremacy in China and the Far East. This little island nation which we opened up to the commerce of the world but a few years ago is not only underselling our manufactured articles in the markets of Asia, but is actually passing us by, with every indication that another decade will see her supreme mistress of the Pacific, unless America awakes to the importance of the trade she seems about to lose and takes some steps toward retaining the hold she has lately gained in the markets of the Far East.

Perhaps it is because we are crowding England and all other European nations from Northern China that our merchants and manufacturers have become indifferent, evidently assuming that when the prosperous times we are now happily enjoying at home are over our surplus commodities can once more be unloaded on the Eastern market. Conditions, however, are changing, and our greatest master minds in the commercial world are beginning to realize that to hold the markets we have gained in Asia we must now compete with a new manufacturing nation—one that lies at the very doors of the markets we desire to control.

Japanese Competition Lowers Ocean Freight Rates.

Possibly this very competition is all that is needed to spur America on to active efforts, which will yet make her mistress of the Orient. Already we see the first results of the competition Japan is forcing upon us; her subsidized ships carry flour from the Pacific Coast to China for \$3 a ton, or \$5 less than the rate existing before the Japanese steamers entered into competition with our own. This cut in freight rates has had far reaching effects. It has opened up to American flour a new mar-

ket, worth now to the wheat growers of the Pacific States \$6,000,000 annually, where a few years ago its value was *nil*. It has more than doubled their profits, sending, as it has, the price of Western wheat up to a paying figure, and taking this product entirely out of the European market, where it competed with and lowered the price of the Dakota grain. Further, the building of these Japanese ships has caused the Great Northern Railway, in order to properly compete with them, to construct four immense ocean leviathans of 28,000 tons each, or almost twice the capacity of the largest steamships now entering the port of New York.

To carry freight across the continent for these huge hulks, hundreds of the largest steel freight cars ever constructed are being built so as to adequately equip the Great Northern Railroad for the changed conditions, and enable it to reduce freight rates to the Orient to just one-half what they are at present. It will take 20 miles of such cars as I have described to carry a full load for one of the new boats, which are to be placed in commission perhaps before the end of the first year of the twentieth century, in readiness to compete with Japan for the carrying trade between the termini of our trans-continental lines ending at Puget Sound and the Trans-Siberian Railway system terminating at Vladivostok.

It is to maintain her commercial hold upon China that Japan opposes every territorial move of Russia in the Far East, and keeps her army and navy always in fighting order, for the success of the "open door" policy, which we have advocated so warmly, is of even more vital importance at present to Japan than it is to America. We may, for some time yet, live upon our surplus fat. Japan has none to spare; her 42,000,000 people already overcrowd the little islands, whose total area does not equal that of California, and but one-twelfth of this is fit for cultivation, so that Japan can continue her prosperity only by becoming a manufacturing nation and finding an outlet not only for her commodities, but also for her surplus population, which is increasing at the rate of 400,000 a year. The little nation, cramped for breathing space, already fears stagnation and commercial death if her opportunities are circumscribed, hence it is that she is ready to fly at the throat of Russia and exhaust her entire strength, if necessary, in an attempt to throttle the Russian bear before it can squeeze to death the Chinese dragon.

That the conflict will eventually come about few can doubt. In Japan the cry in the fall of 1899 was, "War in the spring, before the completion of the Trans-Siberian Railway," but, unfortunately for Japan's plans, her ally England was too busily engaged in South Africa when spring came to give any encouragement, and the summer of 1900 found all the civilized powers at war with China, with Japan and Russia as enforced allies; today the Trans-Siberian road is practically completed, for by utilizing the Amur River, through passengers are booked from Moscow to Vladivostok, and to encourage emigration peasants are carried across the 6000 miles of intervening country for the nominal fare of \$12. All summer they have been pouring over the Urals more rapidly than ever before, preceding and following the army, rapidly augmenting the million or more peasants already in Eastern Asia, raising produce for the vast army of the Czar in the Far East. The lamentable condition of the Japanese treasury alone prevented the realization of the desire of the populace for war with Russia in April, 1901.

Russia Uses Japan as a Cat's Paw.

In anticipation of recent events, fully a year ago Russia saw to it that the impregnable fortresses of Port Arthur and Vladivostok were heavily provisioned with food and fodder brought from Japan, while the Russian Government still spends \$1,000,000 a year strengthening each of these Gibralters. Russia gladly welcomed much of the work done in China by the allied armies, for Russia does not care to burden herself with the expenses of active war, which would mean that the hundreds of millions which she is spending on the development of her possessions in the Far East would be diverted into a useless channel.

No such considerations have hitherto influenced the hot headed patriotic Japanese hosts, however. In the first war with China every official, and even the coolies, contributed a percentage of their earnings to the expenses of the campaign, and they stand ready to a man to make similar sacrifices now, only the strong hand of the Government prevents war.

Although the most hardy and wiry people in all Asia, the Japanese cannot stand extremes of climate; in Formosa the immigrants from the Mikado's domains succumb to the tropical heat and die like flies. Even in more northern China, where hot winds from the western desert make the country a furnace, the Japanese cannot thrive, so that territorially the losses of Wei hai Wei, Port Arthur, and, lastly, Manchuria, were not such calamities to Japan as usually represented; but to preserve national life Japan must share in the trade of these provinces, and from that she will never willingly permit Russia to exclude her; although to preserve her national integrity, and the perpetuation of her people, Japan must find additional territory in which the race can expand.

The Peninsula of Korea, with its soft, salubrious climate, fertile soil and sparse population, is the one portion of all Asia in which the Japanese can best thrive, and so it is that they will fight for its conquest with all the energy and vim of a young nation just risen to power. For years Japan has been husbanding her resources for the supreme struggle for Korea; but now when the supreme opportunity has arrived, despite her precautions, she finds herself face to face with bankruptcy, although still managing to maintain a thoroughly equipped army of 300,000 trained fighters, mobilized mostly in the eastern provinces of Japan, facing the coast of Korea and Siberia, while the modern war ships of the Mikado, when not doing duty in Chinese waters, steam back and forth through the Korean Strait, watching the movements of the Russian navy. In Eastern waters Japan has the advantage, the tonnage of her war ships being 200,000, against but 100,000 of the Russian Far Eastern fleet; both nations, however, are still ordering new battle ships from America and other nations. Russia is inferior in land forces also, her 100,000 soldiers in Manchuria being a poor match for the 300,000 fighters Japan could pour into the country by transport, as a first army of invasion, provided, of course, the Japanese navy could force one of Russia's well fortified ports on the Pacific, which seems doubtful, in spite of the fact that 15,000-ton battle ships have now displaced the 3000-ton cruisers with which Japan destroyed the Chinese navy in 1895.

In her merchant marine Japan also excels Russia, as well as the United States, possessing in the Nippon Yusen Kaisha one of the greatest steamship lines in the world. This company, purely a Japanese enterprise, is the pride of the nation. It maintains a regular line to our Pacific Coast, another to London, one to the coast of Peru, others to Australia, India, the Philippines and Siberia, to say nothing of the coasting service, the steamers of which penetrate to every Chinese port, making the fleet of the Chinese-Eastern Railway seem insignificant in comparison, threatening to drive it and the ships of all other nations out of those waters; yet this is but one of the numerous Japanese steamship lines encouraged by the Government, every boat of which is but an auxiliary cruiser of the navy.

The Japanese as Shipbuilders.

While in Nagasaki recently I visited the dockyards located there. Several fine ocean steamers as beautiful in design as any of our Atlantic greyhounds were in course of construction, besides many smaller steamers and numerous torpedo boats and launches for service on the rivers of China, which Japan had recently succeeded in having opened up to international commerce. A Scotch-American was superintendent of the dockyard, but all other employees were Japanese subjects. The completeness of Japanese shipyards may be understood when it is stated that of the twelve 6000-ton boats being built for the Nippon Yusen Kaisha Line, none are to make a less speed than 14 miles an hour,

and the eight destined for the San Francisco and Seattle lines, of this and the Toyo Kisen Kaisha, are to record a sustained speed of 17 miles an hour.

The dry docks at Nagasaki compared favorably with the magnificent structures I visited at Vladivostok and Port Arthur. With Russia insisting upon her policy of practically excluding Japanese ships from her Eastern Asian ports, the forcible threats of the sturdy little Islanders to fight, if Russian troops occupy another port on the Gulf of Pechili, can be appreciated. The commerce of the country surrounding this body of water is largely American, but the carrying trade is mostly Japanese. It is here that we have most to fear the competition of Japan. The contemplated extension of her steamship lines via Cape Horn to New York and our southern ports will, of course, only lower freight rates and thereby increase our market in the Far East, but with the rapid development of Japan as a manufacturing nation our hitherto unassailable position in the Pechili district is threatened. Already the cotton mills of Japan are beginning to ship their product into this market, which is almost exclusively ours. The \$12,000,000 which we directly and indirectly extract annually from Northern China for our cotton goods has attracted capital to the establishment of mills at the very doors of this great market, and in future our shipments to Japan of raw cotton will increase as our shipments of the finished fabric decrease. The activity of Japan in the Gulf of Pechili and the proposed establishment of a Japanese line of steamships to our cotton seaports bear an easily recognized relationship to each other.

It is Japan that is now suffering from industrial and financial depression; who knows when our turn may come? When it does it must surely prove the opportunity of our recuperative rival in the Far East. It will pay our people to study the conditions of trade in Asia now and watch our opportunities to secure a foothold in advance, or at least abreast, of our rivals, instead of waiting until they have closed ranks ahead of us and shut our products out of the greatest prospective market of the world.

The Purchase of Machine Tools for Rock Island Arsenal.

WASHINGTON, D. C., April 30, 1901.—The presence in this city during the past week of a number of prominent representatives of the machine tool trade served to call attention sharply to the fact that the War Department has not yet awarded the bulk of the contracts covered by the bids opened last October for the equipment of the Rock Island Arsenal. War Department officials, while asserting that no formal representations have been made by the trade concerning this matter, admit that it has caused a great deal of dissatisfaction, and that many inquiries have been received from individual manufacturers and dealers. The Department's attitude in the matter and its plans with reference to contracts not yet awarded are set forth in the following statement made to the correspondent of *The Iron Age* by an official of the Ordnance Bureau:

"The Chief of Ordnance is very anxious to dispose of this whole subject, but has found it impossible to do so up to the present time, owing to the large amount of detail involved, but he now hopes soon to have it out of the way. The advertisements upon which these bids were based represent a rather unusual demand—namely, the complete equipment and installation of a small arms factory at Rock Island. For this purpose special tools of various kinds were needed, and it has not been possible to award contracts offhand to the lowest bidder. As has heretofore been stated, the Bureau some weeks ago sent out notices to those of the lowest bidders whose proposals were favorably indorsed by Colonel Blount, commandant of the Rock Island Arsenal, advising them that contracts would be awarded to them. These proposals, however, cover considerably less than 50 per cent. of the entire opening, and as to the remainder a very thorough investigation is now in progress. When the Bureau found that the commandant recommended the

acceptance of so many bids that were not the lowest, he was requested to give his reasons therefor, and subsequently the bids themselves were returned to him for detailed indorsement of the considerations which induced him to reject the lowest bids. These have since come back, and they are now being reviewed in connection with the information received by the Department as to the bidders and the tools which they proposed to furnish. While it is the purpose of the Bureau to buy the best tools that can be secured, even though the lowest bid is not always accepted, it is very anxious to avoid the awarding of a contract to a mere agent or jobber for a tool at a higher price than the manufacturer himself is willing to supply it for. It does not always appear from the bids whether the tools covered by different bidders are identical in construction, and without investigation it might happen that the Government would pay more than the manufacturer's price for a tool under the misapprehension that it was securing a superior article.

"Another feature that requires careful attention is the danger of awarding contracts to parties who are not in position to furnish the tools upon which they have bid, assuming that they would be able to buy them in case they were successful. Wherever possible we wish to buy of first hands, provided the price is right, but it takes a good deal of care and some investigation to get at the facts in this connection. The Government would undoubtedly have a great advantage in these matters if the practice were uniformly followed of requiring bidders to deposit a certified check for a percentage of the amount of the desired contract to be forfeited in the case of failure to execute the contract if secured. It has sometimes happened that the lowest bidder has been unable to carry out his agreement, and the Government has been obliged to accept a higher bid. In sales of material, also, where the Government disposes of the goods to the highest bidder, it has sometimes been found that where a bidder had offered a good price for the articles to be sold an investigation developed the fact that he had simply made a straw bid, but the Government was powerless to compel him to carry out his agreement."

The Ordnance Bureau is much concerned over the allegation that in certain cases both manufacturers and dealers bid on the identical tool for the Rock Island Arsenal, but the bids of the manufacturers, though lower than those of the dealers, were rejected. Owing to the complicated character of the specifications, as well as of the modifications submitted by some of the bidders in alternative proposals, it has not been an easy matter to verify or disprove these charges, but it is being carefully investigated. In the meantime the Department is following the short sighted policy of observing great secrecy, not only with regard to the bids not yet acted upon, but even with reference to the contracts already awarded. This action is in line with the time honored policy of the Ordnance Bureau to carry on as much of its business as possible under cover, and is doubtless at the bottom of many of the rumors of irregularities now current. The general policy of Secretary Root has been to court publicity with regard to all matters of general interest, but the administration of the Ordnance Bureau is a striking exception to this rule of the Department. It is now intimated that the Rock Island matter will be finally settled within the next 30 days.

W. L. C.

Warren's Pulley Cover.—The Warren Company, manufacturers of Warren's pulley cover, have removed from 26 and 28 Jackson street to 247 and 249 North Franklin street, Chicago. In their new location they will have better facilities for the manufacture of their specialty. This product is a liquid, designed to be applied with a brush on the surface of pulleys, preventing the slipping or slackening of belts. The preparation is of such a character that it prevents the slipping of belts, but at the same time is not so adhesive as to cause the belts to stick to the pulleys. The manufacturers state that since this preparation has been placed on the market, although a comparatively short time since, it has proved so satisfactory that the business has developed rapidly.

The Alabama Steel & Wire Company.

The Alabama Steel & Wire Company commenced the building of their plant in November, 1898, at Ensley, Ala., which is located 7 miles from Birmingham. This location was selected on account of its natural advantages. A person standing at the office of the company may behold the ore mines, coal mines, limestone fields, coke ovens, blast furnaces, steel plant, rod mill, wire mill and nail mills, all within one sweep of the horizon, a combination that is not found in any other locality in the world. The plant is within easy reach of water, so that cheap rates are obtainable on goods for export. The location is also close to the large consuming points of the South and Southwest. The Western markets can all be reached on a parity with and in many cases at an advantage over Pittsburgh.

The company began operations in March, 1900. They are organized under a special charter issued by the State of Alabama, the capital stock being \$2,000,000. The officers are E. T. Schuler, president, who was formerly treasurer of the American Steel & Wire Company, and G. H. Schuler, secretary and treasurer, who was formerly manager of the Cleveland district of the American Steel & Wire Company, both these gentlemen resigning their Northern positions to build the Birmingham plant. The accompanying general plan of the works shows the disposition of the various buildings.

The company receive the billets hot from the steel plant of the Tennessee Coal, Iron & Railroad Company, only a few feet separating the two works. The billets are brought over on a Garrett-Cromwell conveyor, from which they are charged direct into the reheating furnaces to bring them to the required heat for rolling. From this furnace they are pushed automatically by a new and simple hydraulic device onto another conveyor, which carries the billets to the first pass of the continuous roughing train. The steel makes nine successive passes before it is handled by human hands. From this point the steel is finished into a rod faster than by any other rod mill ever built. It will be seen that after the proper mixture is made at the blast furnace of the Tennessee Coal, Iron & Railroad Company, from which the molten metal is carried in especially arranged ladles to the open hearth furnaces of the steel plant, it passes on down to the various forms without being allowed to cool, until it is wound up in a coil of rods. After the mixture of ore and other materials is made at the blast furnace human hands do not touch it until it is reduced to less than 1 inch in diameter on its way to a No. 5 rod.

The rod mill furnaces are the direct firing type, which has an advantage in cost over the ones heated by gas manufactured in nearby gas producers. The rod mill was designed for a twin mill—that is, a distinct and separate mill on each side of the roughing train—and in addition a continuous mill was contemplated, to be built straight away from the roughing train; consequently, the roughing train was intended to take care of a capacity of 1000 tons of steel

in 24 hours. Through this same train the company are now rolling and finishing small billets from 2 to $1\frac{1}{2}$ inches square. The mill was also designed for rolling cotton ties, which the company contemplate doing in the near future. The rod mill is well equipped in engine capacity, having

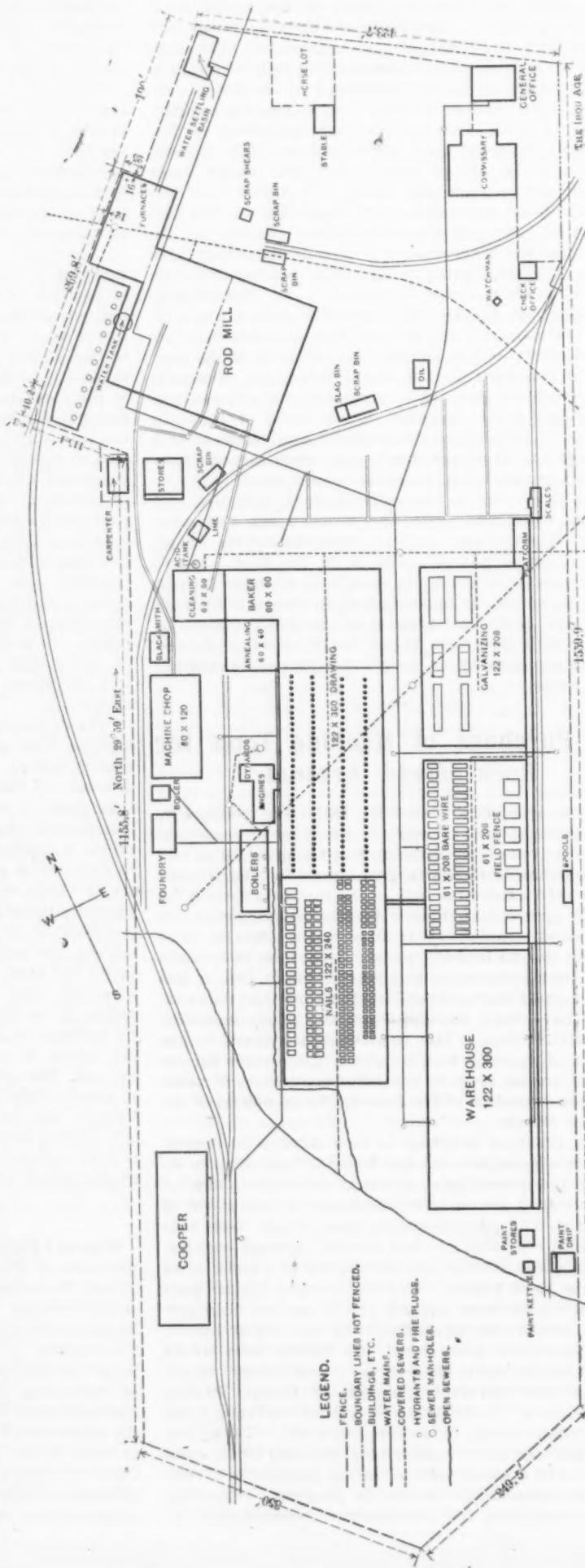


Fig. 1.—General Plan.

6800 horse-power. The power is transmitted by the English rope drive system. The general arrangement of the rod mill is shown in Fig. 2, while the reproduction of a photograph in Fig. 3 conveys a good idea of its character.

After the rods are delivered by the conveyor to the trucks they are weighed, then carried by gravity to the pickling room, the rod mill floor being 9 feet above the floor of the finishing department. After the rods are thoroughly cleaned they are run through the baker,

The present nail capacity of the plant is 3000 kegs per day, but additional nail machines are being built to bring the capacity up to 4000 kegs. The kegs used are manufactured on the premises, made direct from the logs. A sufficient storage capacity has been provided to insure their customers good, dry kegs.

In the barbed wire department the capacity is 120 tons per day, where both two-point and four-point barbed hog and cattle wire is made, either galvanized or painted, the company themselves making the paint that is used on their barbed wire. Twisted cable is also produced in this department. The field fence department joins that of the barbed wire. Here the Joliet clip field fence is made, and it has been found impossible to produce it fast enough to meet the demand. The galvanizing department contains a complete outfit for galvanized wire, with all the latest methods. The capacity of this department is over 200 tons per 24 hours. Here are also separate furnaces for galvanizing all sizes of nails, as well as the clips used on the field fence. The machine shop, foundry and blacksmiths' shops are all complete, equipped in their own way.

The domestic demand for all the product turned out by the company has been such as to keep all of the departments running continuously since they were first started. The company have exported a quantity of rods to Europe and have a large number of orders on their books.

The Phoenix Iron Company.—On the 15th inst. the Phoenix Iron Company of Phoenixville, Pa., put into operation their new beam and shape mill. The mill is driven by Macintosh & Hemphill 28 x 48 inch reversing engines of the latest design. All the material is put in

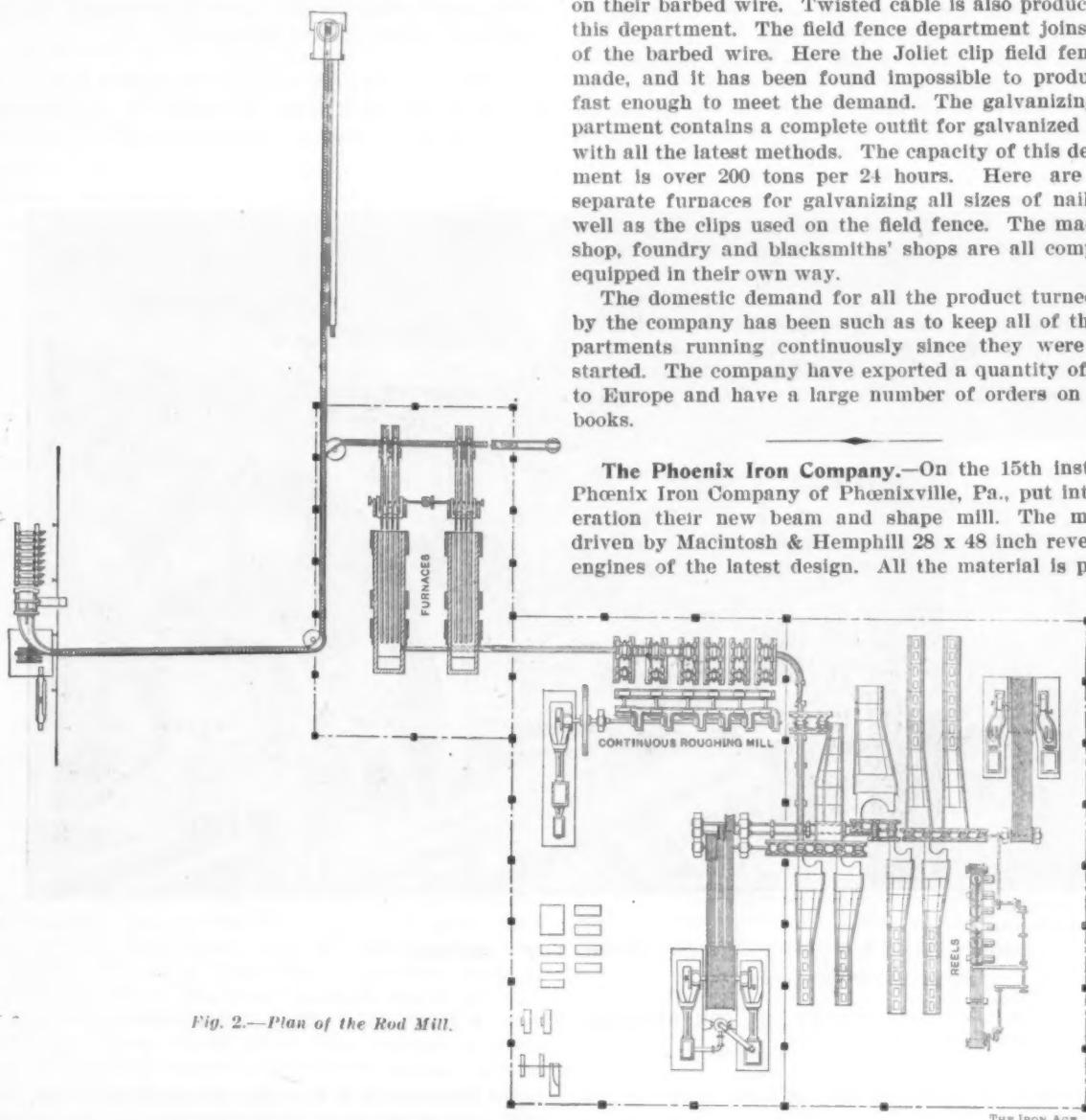


Fig. 2.—Plan of the Rod Mill.

THE WORKS OF THE ALABAMA STEEL & WIRE COMPANY, ENSLEY, ALA.

which is heated principally by waste heat from the muffles, and are drawn into wire in the usual manner through chilled dies. The drawing room has a capacity of 425 tons in 24 hours. All of the machinery in this department, except the shafting, was made by the company in their own foundry and machine shops. The wire room is driven by a 1200 horse-power tandem compound cross direct connected engine.

The nail mill is equipped with one style of machines, all of which, except the second and fourth machines, were built by the company in their shops. The company also built their nail rumblers—in fact, nearly all the cast iron parts of the entire plant were cast in their own foundry—thereby making a large saving in the cost of construction, as well as finishing the parts most needed in the quickest possible time. The nail mill is driven by a cross compound Corliss engine of 700 horse-power. This power is transmitted by means of the English rope system. The same engine drives the barbing department by means of rope transmission.

and drawn from the heating furnaces by Wellman-Seaver electric charging machines and transfer buggy, and handled at the rolls by electrically driven tables of the most modern construction. In 1900 the Phoenixville Iron Company doubled the capacity of their open hearth steel plant to 150,000 tons per annum, making open hearth steel by both the acid and basic process. Its standard quality is subject to bridge builders' and ship builders' specifications, but special qualities are made to any requirements. The bridge shops have also been very much enlarged and supplied with many new tools, and in order to make the eye bars for the Quebec Bridge an extension to the hydraulic shop is now under construction, which will admit of the manufacture of eye bars as large as 16 inches wide by 2½ inches thick. The bridge over the St. Lawrence River at Quebec will have the longest span in the world—1800 feet between piers—exceeding the length of the noted Firth of Forth Bridge in Scotland, by 90 feet, the main span of which is 1710 feet between pier centers. The anchorages for the Que-

bec Bridge have already been constructed in these shops and are partly in place; there are now 1000 tons of heavy construction under way for that bridge, while the total weight will be over 40,000 tons, and will require for its completion about two years of uninterrupted work in the shops. There are also large quantities of other bridge work now under manufacture in the shops for the principal railroads of the United States, the Guayaquil & Quito Railroad of Ecuador, the Nagasaki Company of Japan and many other foreign countries. In the house work the most notable is the Government Printing House at Washington, requiring 8000 tons. In shipbuilding there are orders in hand for materials for hulls for the principal yards, which include the great transatlantic liners of the International Navigation Company and the light sections of nickel steel for both the cup defenders now being built to meet the Shamrock II, these works

one indicted by the Grand Jury. He was tried for first degree murder.

It is reported that the Pennsylvania Railroad Company are backing the North River Bridge Company, who propose to build a bridge across the Hudson River between Twenty-third street, New York, and the New Jersey shore. The scheme contemplates the construction of a bridge for passenger traffic only. The terminal on the New York side is to be one of the largest passenger railroad stations in the world. Work upon the structure is expected to begin within the next 18 months, and the total cost is estimated at \$40,000,000.

The first step in the direction of what is believed to be a projected consolidation of some of the largest transatlantic shipping interests was accomplished this week

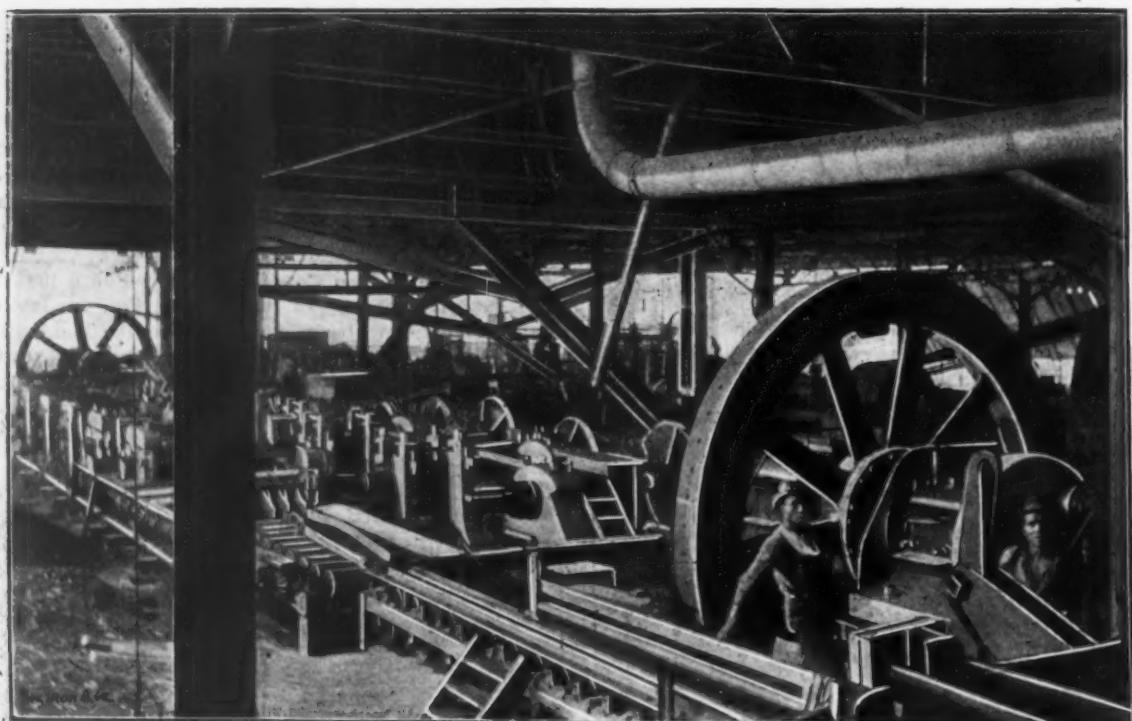


Fig. 3.—General View of Rod Mill.

THE WORKS OF THE ALABAMA STEEL & WIRE COMPANY, ENSLEY, ALA.

having rolled the materials for the hulls of all the cup defenders.

The council of the British Institution of Mechanical Engineers have decided to form an historical museum illustrative of the mechanical progress in Great Britain and have invited engineers to co-operate by the contribution of suitable objects. The museum will be installed in the new home of the institution in London. An extremely interesting collection of original working drawings of early locomotives has already been donated and it is expected that there will be contributed models, drawings, obsolete scientific instruments, tools, &c., which are of little value singly, but which would form valuable links in illustrating the history of mechanical progress when assembled in a well arranged museum.

Charles Peck, a non-union molder who was employed in Cleveland during the recent molders' strike in that city, was found not guilty of the murder of Detective W. L. Foulks, in the Criminal Court in that city last Saturday. Foulks was killed during a riot between union and non-union molders in the business section of the city on September 29 last. Several non-union molders were arrested for the crime, but Peck was the only

in the purchase by J. Pierpont Morgan & Co. of the Leyland Line of steamers. It is expected that the Atlantic Transport Line will also shortly be acquired by the Morgans. The Leyland Line is itself a consolidation of the several steamship companies, owning upward of 90 per cent. of the capital of the Wilson Line, the Furness Line and the West Indian & Pacific Steamship Company.

The Trigg Shipbuilding Company of Richmond, Va., have been awarded a contract for building at \$150,000 a steamer for the Old Dominion Line's river service between Richmond and Norfolk.

An international engineering congress will be held during the first week of September next in connection with the International Exposition in Glasgow, Scotland. The meeting will be held in the University Buildings, which are quite close to the exhibition. Papers will be read and visits made to works on Tuesday, Wednesday and Thursday, September 3, 4 and 5, and excursions will be arranged for the Friday. The president of the congress will be James Mansergh, president of the Institution of Civil Engineers, and the general secretary is J. D. Cormack of the University of Glasgow. The congress is divided into nine sections, as follows: 1, Rail-

ways; 2, Waterways and Maritime Works; 3, Mechanical; 4, Naval Architecture and Maritime Engineering; 5, Iron and Steel; 6, Mining; 7, Municipal; 8, Gas; 9, Electrical.

The Bertrand-Thiel Process.

BY JOHN W. CABOT.

To the list of important inventions which have in the past contributed so much to the progress of the manufacture of steel, and which have aided so powerfully in the remarkable cheapening of the cost of production during the last generation, must now be added the Bertrand-Thiel process. It has already won for itself a permanent place in the art.

The writer has recently had an exceptional opportunity to study the process as carried out at the works where it originated, and is now enabled, through the courtesy of Mr. Bertrand, to publish the following observations, which may be of use to those interested in the manufacture of steel.

The original plant of two Siemens furnaces at which the process has been perfected having already been fully described in *The Iron Age*, it is sufficient to say here that the furnaces are of the ordinary stationary type, one being of some 15 tons capacity and the other of 20 tons; the first, or refining furnace, located at a point 12 feet higher than the second, or finishing furnace, to which it is connected by an ordinary refractory lined runner, 45 feet long and having a pitch of about 3 inches to the foot. As no advantage results from the larger furnace the pair of furnaces may be considered to be of about 15 tons capacity each. The plant has the usual equipment of gas producers, stock hoists, casting crane, ingot cranes, &c., and a hoist is provided by which fluid blast furnace metal in ladles is raised and poured through a short trough into the refining furnace.

The Process.

While the process may be and is carried out either as a pig and ore process, pig and scrap, or as any combination of the two methods, depending upon the amount of scrap available at any particular time, the following satisfactory method was adhered to at the time of the writer's visit.

The first or "refiner" furnace having been brought to the right temperature and the hearth patched with tar dolomite and properly set after a previous operation, a ladle of fluid iron, direct from the blast furnace, was poured in, followed by 7 per cent. of the total charge of quicklime in lumps, free from lime dust, and 16 per cent. of Swedish Gellivare ore; a second ladle of iron completed the refiner charge of 15 tons. Instead of burnt lime an equivalent weight of raw limestone may be used with equally good results. In this particular case burnt lime is available and is considered more convenient. The composition of the iron was: Carbon, 3.70 per cent.; phosphorus, 1.35 per cent.; silicon, 0.90 per cent.; manganese, 0.40 per cent., and sulphur, 0.05 per cent., and the ore had iron, 66 per cent.; phosphorus, 0.50 per cent., and was low in silica and sulphur.

The boiling of the bath in the refiner then began and was continued a little over two hours; the course of the elimination of the metalloids being as shown in the tables given below. Meanwhile the second furnace or "finisher" (from which a previously finished heat had been run), was charged with 3½ per cent. of lump lime, 7 per cent. of ore and 7 per cent. of steel scrap, sufficient time having been allowed to bring this furnace up to a temperature just short of melting.

The refiner was now tapped, the metal running down the connecting trough and over a movable spout pushed into the door of the finisher, the highly phosphoric slag as soon as it appeared at the tap hole of the refiner being skimmed off of the stream of purified metal by means of a shutter held in the trough and caused to flow through a side gate in the trough to a ladle, thence to be taken to the grinding department and prepared for use as a fertilizer in a similar manner to that used in the manufacture of slag phosphate from basic Bessemer slag.

The partially dephosphorized (and wholly desilicized) metal, very hot and fluid, having still over 2 per cent. of carbon, produced little or no runner scrap and coming in mixture with fresh lime and iron oxide in the finisher, immediately began its second boil, and in two and a half hours, the proper conditions of temperature and slag composition and the required composition of the metallic bath having been attained in the furnace, and the phosphorus then being eliminated from the bath to a point of 0.01 phosphorus, the heat was tapped out in the usual manner, the final recarbonizer additions made and the casting into ingots proceeded as usual. After the furnace was drained the sides and bottom of the hearth showed no appreciable wear, and nothing whatever was done to the furnace in the way of patching or repairing; in fact, no patching material was used in the furnace during the period covered by these observations. The interior of the hearth of the furnace remained during that time clean and free from holes.

The Yield.

The weight of good ingots obtained was a little more than the total weight of fluid metal and steel scrap of the charge. For a series of weeks previous to this the average ingot weights obtained had been 102 per cent. of the total weight of metals charged. The yield of ingots obtained will evidently depend upon the proportion of pig metal used in the initial charge, and also upon the percentages of the metalloids in the iron, the excess of metallic iron obtained in the form of ingots over and above that contained in the pig metal and scrap charged being, of course, derived from the ore used in boiling down, which latter gives up iron to the bath in exchange for the metalloids oxidized out of the metal.

During the time occupied by the finishing of the charge here described a succeeding charge of blast furnace metal had been refining in the upper furnace, in a manner similar to that just described, and was run down into the finisher, as soon as this latter was again charged with fresh additions of lime, ore and scrap and brought up to the proper temperature, and the same round of operations was proceeded with. The time in each furnace averages about the same, and is at the rate of a finished heat about every three hours.

Analyses of Heats.

Following are tables of analyses of heats from which tests of both metals and slags were taken at the intervals stated, showing the elimination of the metalloids from the bath and the formation of phosphoric slag:

Table I.—Heat A.—Metals.

Sample Time No. taken.	Description.	Analyses.			
		Car- bon.	Man- ganese.	Sili- con.	Phos- phorus.
1 10.05 a.m.	Refining Furnace—Direct metal	3.22	0.45	0.50	1.35
2 10.45 a.m.	After two additions ore and lime	3.55	0.42	0.34	1.30
3 11.05 a.m.	After one addition ore and lime	3.45	0.42	0.15	0.93
4 11.25 a.m.	After one addition ore and lime	3.05	0.10	0.04	0.39
5 11.45 a.m.	After one addition ore	2.65	0.06	0.04	0.04
6 12.04 p.m.	After one addition ore	2.80	0.06	0.04	0.06
7 12.22 p.m.	Running from refining furnace	2.50	0.10	0.04	0.00
8 1.00 p.m.	Finisher	0.81	0.06	0.04	0.05
9 1.20 p.m.	Finisher	0.35	0.05	0.02	0.02
10 1.40 p.m.	Finisher	0.19	0.05	0.02	0.01
11 2.00 p.m.	Finisher	0.18	0.23	0.02	0.01
12 2.22 p.m.	Running from finisher	0.15	0.32	0.02	0.01
13	Ingots	0.28	0.28	0.02	0.01

Table II.—Heat A.—Slags.

Sample Time No. taken.	Description.	Analyses.		
		Iron.	Silicon.	Phosphoric acid.
1 11.05 a.m.	Refiner—After one addition ore and lime	11.20	20.00	15.67
2 11.25 a.m.	After one addition ore and lime	13.20	15.66	19.41
3 11.45 a.m.	After one addition ore	15.45	13.66	20.90
4 12.04 p.m.	After one addition ore	12.00	14.66	20.30
5 12.22 p.m.	Running from refiner	6.00	19.16	18.88
6 1.00 p.m.	Finisher	9.50	19.00	9.92
7 1.20 p.m.	Finisher	18.00	14.66	9.70
8 1.40 p.m.	Finisher	13.50	11.00	7.16
9 2.00 p.m.	Finisher	13.50	11.00	5.67
10 2.22 p.m.	Running from finisher	13.50	13.00	4.99

Table III.—Heat B.—Metals.

Sample No.	Description.	Analyses.			
		Carbon.	Phosphorus.	Manganese.	Silicon.
1	Refiner metal.	3.57	1.37	0.386	1.34
2	Refiner metal.	3.66	1.27	0.40	1.47
3	Refiner metal.	3.85	0.99	0.20	0.41
4	Refiner metal.	3.66	0.97	0.27	0.32
5	Refiner metal.	3.39	0.37	0.04	0.06
6	Refiner metal.	3.10	0.13	0.02	0.04
7	Refiner metal.	2.50	0.14	0.04	0.03
8	Refiner metal.	2.50	0.19	0.04	0.04
9	First sample from finisher.	1.50	0.08	0.02	0.02
10	Finisher	1.15	0.04	0.03	0.02
11	Finisher	0.35	0.10	0.02	0.02
12	Finisher	0.20	0.10	0.02	0.02
13	Finisher	0.12	0.019	0.03	0.02
14	Finisher	0.14	0.023	0.52	0.02
15	Ingots	0.12	0.016	0.25	0.01

Table IV.—Heat B.—Slags.

Sample No.	Description.	Analyses.	
		Phosphoric acid.	Iron.
1	Corresponds to fourth metal sample from refiner.	8.80	17.20
2	Refiner	13.80	14.00
3	Refiner	14.60	18.20
4	Refiner	15.60	10.10
5	Refiner	14.70	8.60
6	Finisher.—First slag sample.	14.10	23.00
7	Finisher	14.10	15.00
8	Finisher	7.00	22.00
9	Finisher	10.20	19.00
10	Finisher	7.30	25.30
11	Finisher.—Final sample.	5.50	20.50

Table V.—Heat C.—Metals.

Sample No.	Description.	Analyses.			
		Carbon.	Phosphorus.	Manganese.	Silicon.
1	Refined metal.	3.46	1.32	0.39	0.65
2	Refined metal.	3.70	1.32	0.34	0.57
3	Refined metal.	3.60	1.30	0.35	0.36
4	Refined metal.	3.78	0.93	0.25	0.12
5	Refined metal.	3.16	0.41	0.09	0.06
6	Refined metal.	2.77	0.095	0.04	0.02
7	Refined metal.	2.46	0.056	0.06	0.02
8	Refined metal.	2.08	0.113	0.05	0.07
9	First sample from finisher.	0.76	0.053	0.02	0.02
10	Finisher	0.40	0.021	0.03	0.02
11	Finisher	0.29	0.011	0.04	0.02
12	Addition of spiegel.	0.40	0.011	0.22	0.02
13	Addition of spiegel.	0.41	0.013	0.34	0.02
14	Ingots	0.16	0.022	0.29	0.02

Table VI.—Heat C.—Slags.

Sample No.	Description.	Analyses.	
		Phosphoric acid.	Iron.
1	Corresponds to fourth sample metal from refiner.	14.00	14.30
2	Refiner	18.90	15.30
3	Refiner	20.40	17.30
4	Refiner	20.40	15.10
5	Refiner	18.80	8.10
6	Finisher.—First slag sample.	9.30	11.60
7	Finisher	9.00	21.20
8	Finisher	6.90	16.10
9	Finisher	5.20	16.20
10	Final sample.	4.70	15.50

It will be noticed in these tables of analyses that having 1.35 phosphorus in the blast furnace metal charged into the refiner, 90 per cent. of this element is eliminated in this furnace before the charge is transferred to the second one, and more than 95 per cent. of the silicon is likewise gotten rid of. Two-thirds or more of the carbon originally present, however, remains with the refined metal.

The sudden drop in the percentage of both carbon and phosphorus in the finishing furnace is noticeable, at least one-half of the remaining portion of these elements being boiled out of the bath during the first half hour in the finisher. The phosphorus is then rapidly reduced to 0.01 per cent. coincident with the boiling out of the remainder of the carbon.

The final slag from the refiner carries 18 per cent. or more of phosphoric acid, while the first slag test of the finisher shows only one-half of that quantity.

General Conclusions.

The general conclusions to be drawn from these observations, briefly stated, are that the Bertrand-Thiel process marks a distinct advance in the basic open hearth process; that blast furnace metal or scrap of almost any composition may be successfully converted into low phosphorus steel of the best quality by this method, and

that materials can be used even though carrying high percentages at the same time of silicon, phosphorus and sulphur.

Whatever the tenor of silicon or phosphorus or both may be, these elements are first eliminated in the refiner to any degree determined upon and the refined metal brought to a constant composition before being transferred to the finisher.

The extent of the preliminary dephosphorization may be varied according to circumstances and individual judgment. If the refined metal is allowed to still carry 0.10 to 0.15 of phosphorus the slag produced in the finisher will be in a condition favorable for good results in this portion of the operation. The separation from the metal of the highly phosphoric slag at this point, therefore, not only gives a valuable by-product but also makes the final dephosphorization easy and certain. The finishing furnace then has to deal with a metallic bath, coming to it at a high temperature and having a phosphorus content of only 0.10 and practically free of silicon, a very simple proposition.

By preventing any excess of silicon from entering the finisher the best results are attained in regard to maintenance of linings, ports and roof, rapidity of boiling down, uniformity of product and, in general, smoothness of operation.

It may be further noted that the making of the harder grades of steel, such as axle, crank pin and spring steels, in which the carbon must be high and the phosphorus low—grades more difficult than soft steel to make in the ordinary basic open hearth furnace—becomes quite practicable. The dephosphorization is then carried somewhat further in the first furnace and the boiling down in the second one stopped at any desired point, as is customarily done in an acid furnace, and the re-carbonizers added as soon as the proper temperature is reached, the favorable condition of the slag in the finishing furnace and the small quantity of phosphorus coming into this furnace allowing this to be done.

This pair of furnaces are regularly producing more than 45 heats per week. No such two furnaces, worked on the old system on this class of stock, could hope to turn out such an amount of low phosphorus steel material as this, yielding an ingot weight in excess of the weight of metals charged. Both furnaces being drained at each operation there result several advantages:

1. The repairing of the hearth can be properly done. The inevitable wear of the lining along the sides can only be made good when the furnace is empty. This fact is fully appreciated by those who have had the work to do.
2. The weight of metal run from the finishing furnace into the casting ladle at each operation is a known quantity, and therefore the weight of re-carbonizers to be added for any required composition of finished product can be determined as carefully beforehand as has heretofore been the custom in the older methods of steel manufacture. A manufacturer, jealous of the reputation of his product for uniformity, will realize the importance of this point.
3. The control of the weight of the casting ladle charge reduces pit scrap, ingot butts, &c., to a minimum and insures regular working in the casting department.

The consumption of materials for hearth repairs (red magnesite for the finisher and tar dolomite in the refiner) is also reduced to a minimum, as well as the time lost in patching, for the reasons that in the refiner the dephosphorization is carried on at a comparatively low temperature, not so favorable for the action of silica upon the bases as would be a high temperature. The refractories therefore stand well. In the finisher, where the temperature is higher—i. e., at the usual steel melting point—the linings and brick also hold out unusually well, as noted above and for reasons there stated.

A further favorable condition is that the charge of the finisher coming to it at a much higher temperature than that of any direct blast furnace metal the interior brick work is subjected to less sudden changes and variations in temperature than a furnace working from cold stock.

The operations as herein described were carried through with neatness and efficiency, there being no unusual scrap produced or metallic loss, with the exception

of that due to the heavy fumes given off by the fluid metal in running from the first to the second furnace.

In operating with a new plant, having furnaces on the same level, either tilting or stationary, the transference is more conveniently done by means of a ladle to be filled at the refining furnace and the refined metal to be then either poured from the ladle or tapped through the side into the finishing furnace.

Some of the furnaces now under construction for working the Bertrand-Thiel process are so arranged that the partially dephosphorized metal may be either run into the second furnace through a trough or transferred by means of transfer ladles.

The Perpetual Motion.*

BY FRANCIS H. RICHARDS.

To the inventor, nature ever says, "Follow me." The very method of invention is by the selection and organization of means already existing. Even a "new" machine is found, when fully analyzed, to be only a newer organization of features taken ready made from the indefinitely great fund of existing elements. With opportunity thus unlimited, no one, even among those well practiced in evolving new organizations of mechanism, can hope to exhaust the possibilities of their art.

Recognizing, intuitively, that man partakes of the powers of the Infinite, but not always apprehending he is merely a discoverer and not a creator, the inventor has sometimes imagined he could follow nature even to the limit of the perpetually self moving mechanism. Having pursued many a labyrinthine path to a successful result dubbed "impossible" by his fellows, and having an actual—though, perchance, a cloudy—perception of the perpetuity of nature's operations, some inventors have concluded they would somehow and at some time be able to reach that final goal.

All progress, however, must be paid for; every achievement has its price. Strength, of body or mind, as the case may be, wins the race; effort—force in some form—pays the cost of every advance. And what is spent in one direction is not available in another. If, therefore, the inventor, applying all his powers of mind to discovering a solution of one problem, becomes dull of sight to others equally or more obvious, shall we not see even here the law of compensation, and recognize the contribution he may, after all, be making toward broadening the realm of our knowledge?

Not alone in the field of invention do the pioneers, though the heroes of many successes, miss attaining the special object of their search. The philosopher's stone is not found, but following its search the very elements of the earth have been subjugated and marshaled in the service of mankind.

Observing that nature utilizes every atom of matter and force, and perceiving that every loss of force in one direction is compensated for in some other direction, the seeker for perpetual motion, not misled, but led not far enough, finds seeming confirmation in natural laws for his hopeless attempt, and sees, not altogether incorrectly, even in the doctrine of the conservation of forces, proof of the final realization of his search. The error consists not so much in assuming the possibility of the perpetual motion as in failing to recognize that this consummation already exists. Nature, who always says "Follow me," and whose lamp illuminates the entire course of creation from the atom to the Infinity, lighting the pathway of all human achievement, points unmistakably both to the possibility and the fact.

The perpetual motion which the inventor has sought is not a myth, but is real. But that complete compensation of forces of which he has dreamed is found only at the limit of possibility—at infinity. There can be, as there is, only one perpetually self moving mechanism, and this is—the Universe.

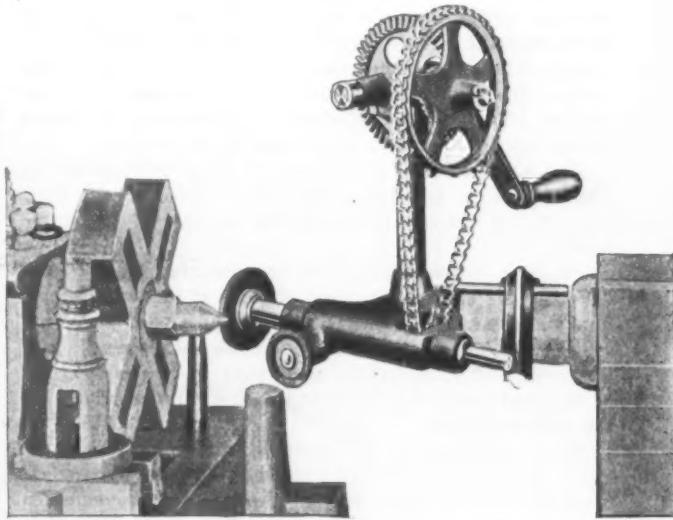
The Iowa Iron Works, Dubuque, Iowa, have been awarded a contract for the construction of a very large

* Presented at annual meeting of the American Association of Inventors and Manufacturers.

steel towboat, which, it is claimed, will be the largest towboat in the world. It will be able to tow 50 barges loaded with coal. The Monongahela Coal Company, Pittsburgh, placed the contract.

The American Lathe Center Grinder.

The lathe center grinder here shown is manufactured by L. S. Heald & Son, Barre, Mass. The grinder is clamped directly to the tall stock spindle and carries a grinding spindle wheel at such an angle that it will grind the center to the angle of 60 degrees without possibility of error. With this grinder it does not matter what the size of the tall spindle is or whether the lathe happens to have on a large or small face plate, or any face plate at all, and as it uses hand power there are no connections to make to get power. It does not matter either whether the tall stock happens to be set over for turning tapers or not, as the correct angle will be given the center just the same. The grinding spindle is driven by sprocket wheels and chain, making it easy to get plenty of speed for the wheel, and this construction



THE AMERICAN LATHE CENTER GRINDER.

makes an easy running machine. The sliding bearings are separate from the rotary bearings, so that there is no wear affecting the accuracy of the device.

The Pennsylvania Steel Company.

The Pennsylvania Steel Company have been incorporated at Trenton, N. J., with an authorized capital of \$25,000,000 common stock and \$25,000,000 non-cumulative 7 per cent. preferred stock, the incorporators being Effingham B. Morris, Edgar C. Felton and Luther S. Bent. The charter specifies that the company's objects are to manufacture, mine and deal in iron, steel, manganese, copper and other metals or alloys; also to deal in coke, gas, lumber and other materials, and to acquire, own or lease lands containing ores or minerals. The Board of Directors is to consist of between nine and 15 members. The charter takes advantage of the act passed by the last Legislature for the benefit of the United States Steel Corporation, which enables changes in the by-laws or any other business heretofore requiring a two-thirds vote of the total issued stock to be transacted by a two-thirds vote of the stock actually represented at any meeting of which due notice has been given, or at any regular meeting.

The agent of the company in this State is the New Jersey Corporation Guarantee & Trust Company of Camden.

Under the reorganization the old preferred stock received a bonus of 50 per cent. of the common stock. The amount to be issued is \$16,500,000 of preferred stock and \$11,500,000 of common stock.

Notes from Great Britain.

HASTINGS HOUSE, NORFOLK STREET, LONDON, W. C. }
April 20, 1901.
. The Duty on Coal.

The event of the week has undoubtedly been the threatened export duty on coal of 25 cents a ton. Because the Chancellor of the Exchequer has proposed the impost it does not follow that it will become law. The actual procedure is that immediately after the budget announcement resolutions embodying the proposals outlined by the Chancellor are submitted to the House and passed. The duty is then leviable. But if, in subsequent discussion, any particular proposal is withdrawn then moneys levied by the Treasury are returned. Then again, even if the export duty become law it is highly probable that some arrangement will be reached whereby existing contracts will not be affected. Meantime the Government's majority has been considerably reduced and a very strong lobby against the proposed duty is being organized. There is every temptation on the part of the Government to yield, inasmuch as financial purists in the House of Commons are few, while there is no strong sentiment against adding still further to the national debt. Trade in the coal centers is temporarily at a standstill. The exporters are naturally holding their hands, while the home coal trade must ascertain what volume of export coal will now be thrown upon the home market. The probable effects of this proposal are stated by the Cardiff Chamber of Commerce, as follows:

(a). A tax on coal exports would materially assist the United States, Germany and other countries in their competition against Great Britain in one of its staple lines.

(b). The competition of these countries has already deprived the United Kingdom of some of its foreign markets and diminished its exports. The proposed tax would still further diminish exports and thus reduce wages and throw out of employment a number of the population of the coal exporting ports and of the miners producing the coal exported.

(c). A reduction in the export of coal would, by causing a scarcity of outward freights, increase homeward rates of freight and so increase the cost to the consumer of breadstuffs, raw materials and other commodities imported into this country.

(d). On the assumption of a tax being imposed the contracts for delivery abroad already entered into in good faith would be exempt, as would also the coal sent to foreign depots for the use of British vessels. The balance remaining would yield so small a revenue for the current year as not to justify the cost of collection or the dislocation caused to trade.

The principal ports affected are:

	Tonnage, 12 months.	Value.
Cardiff	14,309,836	\$41,000,000
Newport	3,033,616	8,500,000
Swansea	2,224,238	6,000,000
Glasgow	932,148	2,200,000
Leith	458,490	1,200,000
Goole	785,074	1,800,000
Grimsby	1,089,439	2,800,000
Hartlepool	458,111	1,100,000
Hull	1,811,781	4,000,000
Newcastle	3,484,084	8,500,000

The total amount of coal exported last year was 43,111,404 tons, valued at \$115,000,000.

The tax, if levied, will, in the last resort, fall upon the foreign buyer, but a difference of 25 cents on a close quotation will probably lose many important contracts. In any event, I think the shock the market has received will prick inflated prices. If so, the Chancellor of the Exchequer will have performed a most useful and timely function.

Reduction in Wages.

The blast furnace men employed by the Barrow Steel Company, together with all other operatives employed in the iron smelting department, have received notice that by the terms of the sliding scale in force for some time a reduction of 18½ per cent. becomes necessary. Wages in these works are still 18½ per cent. above the standard price.

Corporation Works.

I have several times directed attention to the growing trade done by municipal corporations. It is growing to such an extent that in some lines a municipal contract makes all the difference between success and failure. The extent of municipal trading is indicated by a report lying before me of the Gas and Tramways committees of the Manchester City Council. The Gas Committee, in forecasting their budget last year, anticipated a profit of \$200,000 on the year's transactions. But the inflated price of coal and coke has exercised an adverse influence and consequently \$55,000 only goes in relief of rates. Increased expenditure, caused by increased prices, both of labor and material, exceeded \$650,000. The Tramways Committee anticipate a profit of \$100,000 on their first year's trading, which speaks volumes for the business acumen of the gentlemen concerned. Of course, readers of *The Iron Age* thoroughly understand that in Great Britain city and borough councils work without any remuneration. British municipal administration is wonderfully clean, scandals being exceedingly rare. At the same time, if municipal enterprise is to develop as rapidly in the next decade as it has done in the past, it is practically certain that we must find money to pay our elected representatives. The whole thing must be put upon a much stronger business basis. Meantime, Americans coming over here with heavy metal goods should never fail to make the acquaintance of city and borough and county engineers.

S. G. H.

Automatic Boiler Pressure Controllers for Mechanical Draft.

Mechanical draft, and especially mechanical induced draft, may be characterized as the economy factor of modern boiler practice. Of the many advantages following in the train of induced draft none has been so instrumental in causing its rapid introduction and development as the marked savings effected thereby. The modern captain of industry is not slow to take advantage of any improvement which may serve to cheapen the first cost of his equipment and at the same time materially increase the efficiency thereof.

The essential feature of mechanical induced draft may be said to reside in the application of a fan between the smoke box and the stack to create the draft which is necessary to supply oxygen to the fuel, and which it has been the function of the chimney heretofore to produce. In the case of a fan installation the stack ceases to become the draft agent and hence need only be of a height sufficient to discharge the gases so as not to be obnoxious. The heat of the gaseous products of combustion is now no longer necessary, as in the case of the chimney, to create the necessary draft, and may therefore be extracted by the agency of economizers or feed water heaters, thus reducing to a minimum the greatest source of loss which the boiler plant knows.

It will be seen that instead of being a fixed quantity, as in the case of a chimney, the intensity of the draft may be varied by means of the fan engine speed. Thus, when increased steam consumption or other causes occasion a fall in the boiler pressure, the deficiency may be made good by an extra turn of the fan engine throttle. It often becomes desirable that this regulation for a constant steam pressure should be made automatically, and this is easily accomplished by placing a pressure regulating valve in the steam pipe of the engine which drives the fan. Such a device may be so adjusted as to cause the fan engine speed, and hence the intensity of draft, to be increased whenever the pressure tends to fall off, thus giving a very nearly constant boiler pressure.

In these days, however, the steam engine is by no means the only motive agent which is utilized for fan driving. In many situations the electric motor, either belted or direct connected, has been found to be by far the most suitable arrangement for fan work, being peculiarly adapted to such service by reason of the identity of motion of the driving and driven portions of such a combination. The application of motors for driv-

ing the fans of induced draft plants has involved the problem of speed regulation for a constant steam pressure, as in the case of a steam driven fan heretofore mentioned. This problem has been solved by the Buffalo Forge Company of Buffalo, who are now able to arrange for automatic control of the fan motor speed. This is effected, of course, through the medium of a special motor controller actuated by fluctuating boiler power. In this way exceedingly close regulation of the boiler pressure can be obtained with a minimum need of attention on the part of the fireman, though, of course, it is not to be implied that the latter individual under such arrangements need become simply a figure-head.

he Wallace Painting Machine.

A machine for whitewashing or coating with any cold water paint is being introduced by the Wallace Supply Company of 56 Fifth avenue, Chicago. It is a pneumatic apparatus which sprays the liquid through a nozzle so arranged as to avoid clogging and giving a wide and even distribution of spray. There is practically no dirt, as the spray is worked under a pressure which in-

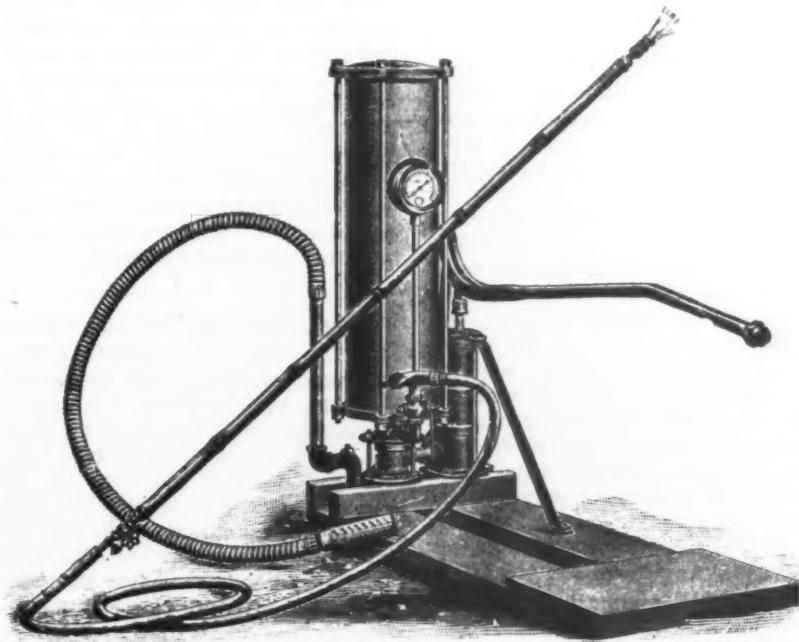
Canadian News.

The Government Contract for Sault Rails.

TORONTO, April 26, 1901.—In the House of Commons on the 24th inst., Mr. Blair, the Minister of Railways and Canals, explained the discrepancy between his former statement of the steel rail contract and the actual wording of the contract itself. He had stated that there was no specific arrangement with Mr. Clergue's Company to take rails for more than one year; whereas the document showed that the Government was to take 25,000 tons per annum for five years. It seems, however, that the agreement, as prepared by the law officers, was not in accordance with the order in Council authorizing it. Mr. Blair says that he was not aware of this when he explained the item in the estimates calling for more to pay for the rails. He also informed the House that, as it turned out, the agreement had not yet been signed. He promised that, before it should be executed, the agreement would be made to correspond with the order in Council.

Mr. Blair proceeded to defend the arrangement in the interests of Canadian industrial development.

The leader of the Opposition, R. L. Borden, said there



THE WALLACE PAINTING MACHINE.

sures contact with the surface to be coated. The device carries a special compression tank, which the operator can charge and then continue with the operation of coating for some time before the charge becomes exhausted. A few strokes of the pump serve to recharge the tank.

The outfit consists of a special air and liquid pump connected to a steel compressor tank. This pump has an enameled porcelain shell, which is not affected by the action of the chemicals in the whitewash or paint. The plunger is so constructed that the valves, which are made of a composition of rubber and gutta percha, have but slight contact with and are never immersed in the liquid. This plunger can be removed to the top of the pump without unbolting from the platform. The check valves are made from the same composition as the plunger valves.

The Penn Radiator Company, manufacturers of steam and water radiators of Corry, Pa., have appointed Charles S. Stephens as their general sales agent for all Eastern territory, including the Pittsburgh district. Mr. Stephens will be located at the New York office, 21 Beeckman street. He was formerly long connected with the Riverside Iron Works of Wheeling, W. Va.

was not a word in the agreement requiring the rails to be made in Canada. To this Mr. Blair replied that he had Mr. Clergue's assurance that the rails would be produced at the Canadian Sault in time. Mr. Dymont, another member of the House, said he personally knew the work to be near completion, and that he had been told less than a fortnight before by Mr. Clergue himself that delivery of the rails would be begun in the first part of August. The Premier, Sir Wilfrid Laurier, also spoke in approval of his Government's action. In his concluding speech the Minister of Railways and Canals mentioned again that he had Mr. Clergue's assurance that the rails would be ready for delivery from the mills at the Canadian Sault in the time specified, but the Minister, speaking personally, said he had his doubts as to this. However, he was satisfied that if the company could not furnish the rails this year the Government would not go elsewhere, but would wait, in order to encourage the new industry. The rails would be used for relaying almost the whole of the Intercolonial Railway, so that the track from end to end would be laid with heavy rails to carry the 80 and 90 ton engines being put on the line. The item in the estimates, providing payment for the rails, was allowed to pass on the understanding that it might be reopened when the other railway estimates come up.

The Clergue Steel Plant.

E. V. Clergue, brother of F. H. Clergue, the head of the syndicate which is carrying on so many enterprises in Western Ontario, was in Toronto a few days ago. He is one of the officials of the syndicate, directing certain of the undertakings the latter has in hand. In an interview he stated that in 18 months the steel works at Sault Ste. Marie would be so far completed and operated as to turn out 600 tons of steel rails per day. Other furnaces and mills will be begun in the autumn of a capacity of 2000 tons per day, and will be working at the full a year later. He says that the syndicate will buy its pig iron in the meantime from the Midland and Hamilton furnaces, to which it will furnish ore from the Helen Mine. Later on iron furnaces will be built at the Sault to supply the steel plant there. Mr. Clergue referred to a dispatch from Detroit respecting a steel establishment of \$50,000,000 to be put up at Sault Ste. Marie, of which one A. R. Harvey of Liverpool was said to be the promoter. "You may say," said Mr. Clergue, "that we have no connection whatever with Mr. Harvey or his proposed mill. He is an Englishman who is promoting an entirely separate concern. He has been talking of buying ore from us. We will sell ore to him the same as to any one else, if we have it to spare, but as yet we have not even made a contract with him to do that. We have all the money we want, and are not looking for any English capital for our industries."

New Line from Crow's Nest Mines.

A project to open a railway from the coal mines of Crow's Nest Pass to the American boundary line, where it would presumably be brought into connection with the Great Northern system, created for a time some disturbance in political circles at Ottawa. J. J. Hill of the Great Northern was said to have an option on a controlling proportion of the Crow's Nest Coal Company's stock, and the leading interests in that company were the promoters of the new railway to connect with Mr. Hill's road. There was an outcry, in which the Canadian Pacific Railway Company led, that this would mean ruin to the gold and silver-lead smelting interests of Southern British Columbia. However, an arrangement was finally arrived at, and the Railway Committee at Ottawa passed the bill to incorporate the Crow's Nest Southern Railway Company by a unanimous vote. This was done after the Minister of the Interior submitted an agreement that the Dominion Government had just entered into with the Crow's Nest Pass Coal Company and the Crow's Nest Southern Railway Company.

This agreement provides against discrimination against Canadian consumers, the penalty being \$3 per ton. The agreement shall terminate when effective and satisfactory competition has arisen.

Quantity of Coal at Crow's Nest.

The Geographical Survey of Canada has just issued its summary report for 1900. Embodied in it is a very interesting description of the coal fields of Crow's Nest Pass by one of the Survey staff, J. McEvoy. He has ascertained the actual area to be approximately 230 square miles, and that the coal in the Crow's Nest deposits is 22,595,200,000 long tons.

Minor Notes.

S. J. Ritchie's long standing suit to prevent the Canadian Copper Company's proposed auction sale here next month of the property of the Vermillion Mining Company in Algoma district has been decided against the plaintiff.

A proposal has been received by the Industrial and Legislative Committee of the Ottawa City Council for the erection of smelting and steel structural works in the city. It comes from J. B. Powell, representing the International Banking & Investment Company.

In Montreal a few days ago H. M. Whitney confirmed the news that the Dominion Iron & Steel Company had made a contract with W. Jacks & Co. of Glasgow for 150,000 tons of pig iron yearly. The construction of the company's steel rail mill he reports to be proceeding rapidly, and hopes it will be turning out rails by next October.

Six months ago a proposition was received by the Dominion Government from an English company relative

to the establishing by the latter of a factory for manufacturing rifles and other arms for the Canadian militia. The company have brought up the matter again, and certain remarks made recently by the Minister of Militia rather favor the belief that some such works will be established here.

The Government Engineer has just returned to Toronto from a trip over the Ontario & Rainy River Railway. He reports rails laid 140 miles from Port Arthur, and construction trains running the whole distance. The line is expected to be completed to the mouth of Rainy River before summer closes. He says that several iron properties are being developed along the route.

C. A. C. J.

McKenna Bros. Brass Company, Limited.—The contract for the erection of the large brass works and power plant of the McKenna Bros. Brass Company, Limited, at the corner of Third avenue and Ross street, Pittsburgh, has been awarded by James T. Steen, architect, to Alex Gilliland. The building will be 80 feet wide, 100 feet long and six stories high. The walls will be of brick, with interior steel construction. The Fort Pitt Bridge Company of Pittsburgh have the contract for putting up the steel structure. The building is to be ready by September 1 next, and is to cost about \$100,000. The McKenna Bros. Brass Company, Limited, have been doing business in Pittsburgh for more than 40 years, the original style of the firm being A. and T. McKenna. The founders were the late Alexander and Thomas McKenna. The business is now conducted by five of the sons of Thomas McKenna, and employs about 60 men. After the new works have been completed the number of hands will be increased to 100 or more. The firm are at present located on Third avenue, Pittsburgh, but owing to the rapid growth of their business their present quarters are much too small for their needs.

A New Rod Mill for Ellwood City.—The Hartman Mfg. Company of Ellwood City, Pa., manufacturers of Hartman steel and wire specialties, have decided to erect this summer a rod mill adjacent to their present works in Ellwood City, and will draw all the wire they use in the manufacture of their wire fencing and other wire goods. This will leave the concern a surplus of wire over and above their own needs, which they will put into wire nails, and will probably have 500 kegs a day or more to sell in the open market. None of the contracts for the new mill or the buildings have yet been let, but the firm will place these as soon as the rush of their spring trade is over, and they have the time to devote to the new project. This concern are running their works 24 hours a day, and are somewhat behind in their orders, so great is the demand for the goods they make.

The Fort Pitt Forge Company.—The Fort Pitt Forge Company are being organized at Pittsburgh by Thomas W. Smith and others. Application has been made for a charter for the concern, with a nominal capital stock of \$10,000, which will be increased later. Mr. Smith is treasurer of the Pittsburgh Screw & Bolt Company, and other officials of that concern are associated with him in the new project. The location of the new plant has not been determined upon.

It is understood that a proposition has been made to the United States Steel Corporation to buy \$5,000,000 of the common stock and place it among employees of the concern at about \$50 a share on easy payments. In this way it is hoped to more closely cement the relations between the combine and their thousands of employees.

A dispatch from Santa Ana, Cal., reports that large deposits of tin have been discovered in the Trabuca Cañon in Orange County, Cal. A company, having filed claims on 7040 acres in the district, are beginning the work of development and will, it is stated, erect a smelter. J. A. Comer of Los Angeles is the head of the concern.

The Iron Age

New York, Thursday, May 2, 1901.

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The English Export Tax on Coal.

One of the arguments brought forward at once by English colliery proprietors against the proposed tax of 1 shilling per ton on exports of coal was that it would give important advantages to American and German coal producers. This seems to have been accepted unquestioningly by many commenting on the proposed measure. It brings up once more the much discussed question whether, in the near future, the United States has a serious opportunity to become an important factor in supplying foreign markets. During the excitement in Europe last year over the great rise in the price of coal consumers on the Continent encouraged the belief that a great future lay before the owners of American mines. What it all meant is pretty well indicated by the confession of the general manager of one of the great French systems which consumes over 3,000,000 tons of coal annually. He admitted that he had purchased a trial cargo of 3000 tons and added that it accomplished its purpose of frightening those who usually supplied him into a very substantial reduction in the price on new contracts.

We heard in the summer and fall that many hundreds of thousands of tons of American coal had been purchased for shipment to Europe. What was then contracted for must have been pretty well delivered by now. Yet during the first nine months of the fiscal year beginning July 1, 1900, we exported to Great Britain 4243 tons, to France 156,580 tons, to Germany 14,761 tons and to other countries in Europe 364,614 tons. It is probable that the bulk of the latter tonnage went to Mediterranean ports. Under conditions which are favorable to an extraordinary degree we marketed 540,000 tons, which is a paltry quantity relatively. The only really promising field is the Mediterranean.

Our natural customers whom we have held for years are Canada, which took 3,751,877 tons, Mexico with 439,142 tons, Cuba with 277,251 tons and the West Indies with 297,054 tons. Out of the total exports of coal during the first nine months of the fiscal year of 5,672,756 tons, 1,310,464 tons was anthracite, which, of course, goes to Canada. The coal used in the countries south of us is chiefly employed by railroads and for coaling ships, the general industrial requirements being small, and the domestic consumption practically *nil*.

So far as our Pacific Coast is concerned, we always have been and still are importers of coal. During the first nine months of the fiscal year we imported 1,466,667 tons, of which 1,093,839 came from British North America. The greater part of this is Vancouver coal, going to our Pacific Coast ports, and some Nova Scotia coal shipped to New England.

To assert that under the circumstances American coal threatens to be a serious rival of English colliery owners, even with an export duty of 25 cents per ton, is displaying ignorance of the true state of affairs. Americans, therefore, have little interest in this latest British method of procuring revenue beyond the mere fact that it has been resorted to.

Nor will the American iron industry be influenced appreciably by the expected lowering in the price to English home consumers, which is supposed to follow the possible decline in coal exports of Great Britain. To the United States the whole matter is of little direct importance.

The World's Copper Supplies.

The world's copper markets have during the past few years presented many features which have upset the views held in the trade in the past. The economic doctrine that an article cannot long maintain a position in price far above what might be termed a normal figure has been thoroughly exploded. The normal price is supposed to be that at which the article can be produced plus a good profit to the producer. The argument is fallacious, that a very rapid development of output must follow a price yielding exceptionally large profits. Mining work and metallurgical plant in an often remote region cannot be expanded over night. New enterprises require elaborate and costly preparations involving much delay, particularly since all really important new deposits are low grade, which cannot be operated successfully except on a large scale. The experience of the past few years has proven that the production of any metal, and notably that of copper, cannot be rushed, and that it is quite possible that consumption may for a long time warrant prices which yield the miners extraordinary profits. Experienced men in the copper mining industry do not expect this windfall to continue indefinitely.

Let us turn first to the recent records of production, which are gathered in convenient form by the well-known firm of Henry R. Merton & Co., Limited, of London. For many years they have published annually a statement of the principal copper supplies of the world. The last one, just issued, includes the year 1900, from which we quote the last five years:

	The World's Copper Supplies, 1896-1900.—Gross Tons.				
	1900.	1899.	1898.	1897.	1896.
Australasia	23,000	20,750	18,000	17,000	11,000
Austria	865	915	1,110	1,210	1,075
Bolivia	2,100	2,500	2,050	2,200	2,000
Canada	8,500	6,730	8,040	5,905	4,000
Chile	25,700	25,000	24,850	21,900	23,500
Cape of Good Hope	6,720	6,490	7,060	7,440	7,450
Germany	20,410	23,460	20,085	20,145	20,065
Italy	3,000	2,965	2,965	3,480	3,400
Japan	27,840	28,310	25,175	23,000	21,000
Mexico	22,050	19,335	16,435	13,370	11,150
Newfoundland	1,900	2,700	2,100	1,800	1,800
Norway	3,935	3,610	3,615	3,450	2,500
Peru	8,220	5,105	3,040	1,000	740
Russia	8,000	7,210	6,260	6,025	5,100
Spain and Portugal	52,872	52,168	52,375	53,060	53,325
United States	268,787	262,206	234,271	216,060	203,893
Miscellaneous	2,185	2,730	2,195	2,685	1,365
Totals.	486,684	472,244	429,626	399,730	373,363
U. S. per cent.	55.3	55.5	54.1	54.1	54.6

During all this period, therefore, the United States contributed more than one-half of the total of the world's supply and has been the principal beneficiary of the great rise in 1899 and 1900.

It will be observed that the output was much enlarged in 1899, but that 1900 brought a relatively small addition to the tonnage. The greatest expansion is going on in Peru, in Australia, Canada and Mexico, the production in the United States continuing at the rate of about 270,000 tons per annum. It is quite evident that the majority of the mines did their best in 1899 and that the new producers did not to any considerable extent get into line in 1900. But one by one new enterprises are coming into the field. Few of them are of great importance singly, but in the aggregate they will make an

impression. The fact must be considered, too, that with modern improvements the cost of producing copper has declined, and has more than offset in the majority of cases the natural increase due to greater depths in mining and the tendency toward lower grade in the lower levels of many deposits.

But, after all, it is not so much the question of the supply of copper which is the principal influence in shaping the value of that metal under the peculiar conditions prevailing during the past two or three years, as it is the consumption. The enormous requirements for electrical purposes, notably in Germany in 1899 and during the first half of 1900, made the high price possible. The foreign demand fell off heavily in the second half of 1900, our exports declining from 90,000 tons in the first six months to 70,000 tons in the second half, and during the first quarter of 1901 declined to 25,000 tons, and that is largely balanced by our imports. As an offset, it is unquestionably true that our home consumption expanded very greatly since the fall of last year.

Still, the impression prevails in the copper trade that metal is accumulating in the hands of some of the controlling interests, who are credited with being deeply involved in the speculation in copper stocks. In fact, the effort to market the latter is believed to be the leading consideration at the present time.

The Western Implement Trade.

The agricultural implement trade contributes largely to the importance of the Chicago iron market. Very extensive establishments of this character are located in Chicago and its immediate vicinity, while hardly a town of any importance in Illinois and adjoining States is without a manufacturing interest of some kind producing agricultural implements or vehicles largely used by farmers. The raw materials purchased by these manufacturers are almost exclusively bought through Chicago sales agencies. Frequently during the past decade the implement manufacturers have proved the backbone of Chicago iron and steel interests. During times of fair prosperity among the railroads the purchases of material for their use have, of course, run considerably in excess of the requirements of the agricultural people, but the trade from that source has not been so continuous and so reliable as the demand from manufacturing consumers doing business directly with the farmers. The present year is one of those exceptional periods when both railroads and agriculturists are enjoying great prosperity, and the combined necessities of these great consuming interests have expanded the volume of business much beyond its ordinary proportions.

The implement manufacturers conduct their business differently from nearly all other manufacturers of products consuming much iron and steel. It is necessary for the implement makers to anticipate the season when their products will be in demand by consumers, by accumulating large stocks of implements which may be distributed throughout the country, so as to be available immediately when demanded. Farmers like other people do not generally buy in advance of their needs, but wait until an implement or machine is actually wanted, and then expect to get it at once. This causes manufacturers to make up and carry large stocks of goods, so as to be able to meet the very heavy demand at limited times. The nature of the business thus requires the manufacturers to contract for materials many months before the season when the manufactured goods will be sold. Contracts are usually made for estimated requirements for an entire year. These contracts are placed

at varying times in different years, running from April to August, depending upon the condition of the iron trade and the outlook for crops.

This year the contracts are being placed earlier than usual. The manufacturers have been prompted to this action partly by the great strength of the iron market and the possibility of higher prices later in the year, and also by the extraordinarily encouraging prospects for the coming crops. The contracts they are now placing are for bar iron, steel bars, sheets, plates, bolts, nuts, pig iron, &c., for deliveries running from the coming July to July, 1902. The quantities which are called for by these contracts can be inferred from the fact that one large agricultural establishment last year alone consumed 65,000 tons of bar iron and other forms of rolled iron and steel, as well as 55,000 tons of pig iron. Another establishment in the same line is known to be at present melting in its foundries not less than 350 tons of iron daily, only a third of which is scrap. The operations of establishments like these are on such an enormous scale that in their foundries it has proved necessary for them to adopt continuous melting in the cupolas. The process of molding thus runs along without being divided into heats as customary in ordinary foundries.

The implement manufacturers of the West are steadily improving their facilities, and are among the most enterprising of the consumers of iron and steel in introducing the most modern equipment and the best appliances for handling their work expeditiously and turning out a large product cheaply. The great activity of the Western iron trade for the past month has been due largely to the contracts being made for the coming season, which almost invariably call for heavier quantities than ever before. The interests dependent on the implement manufacturers are also important consumers of iron and steel. The manufacturers of malleable castings must be considered as practically forming a part of the implement trade. These interests have increased enormously in importance during the past five years, their increase being an index to the great expansion which has taken place in the implement trade.

In this connection it is not out of place to refer to an influence which has been of additional importance in improving the outlook for the implement trade. The price of agricultural products has an important bearing always on the feeling of farmers. When they are getting good prices for their products they are always liberal buyers of implements, as well as of other classes of merchandise. A daring and resourceful operator on the Chicago Board of Trade, named Phillips, has recently accomplished a great deal for the benefit of the farmers by advancing the price of corn, which has also assisted in keeping up the price of other grains. Although attacked by a strong combination of operators seeking to break down prices, this one man has so advanced the price of corn that farmers are being enriched by the high rates which have thus been established. It is difficult to say whether these prices are artificial or not, and whether they can be maintained for any length of time. Possibly Mr. Phillips may have more accurately gauged conditions than his competitors. While they continue, however, they are enormously beneficial, not only to farmers, but to the interests dependent on the farming trade. Coming at this time they are proving strongly influential in developing a most encouraging outlook for the implement trade and naturally for the iron trade. The movement is similar to the Leiter wheat deal several years since, which was such an important factor in rescuing the farming interests from the slough of despond into which they had fallen. Cheap food products

are always desired by the masses, but when such cheapness is secured at the expense of so important a branch of national energy as the farming industry, it is a dear process for the country. The sympathy of business interests is therefore naturally with the operator who endeavors to secure good prices for farm products.

CORRESPONDENCE.

The Tariff on Iron and Steel.

To the Editor: Noticing you have given considerable prominence, in recent issues, to the organization of the Manufacturers' Association of Bridgeport, and to the end that the manufacturers' associations of other cities and other manufacturers in other cities where manufacturers' associations are in process of formation or are contemplated, we would suggest that you give due prominence to the position which these manufacturing associations in the various cities, particularly along the Atlantic seaboard and Canadian border, and especially in New England, are taking, as regards their present handicap in the cost of raw material, such as coal, coke, iron ore, pig iron, steel ingots and billets; and their desire to have these commodities placed by Congress immediately upon the free list. They believe that as these materials are produced cheaper in this country than in any other portion of the world, and are sold abroad at lower prices than along the seaboard and Canadian border, the industries which produce them are no longer infant, and do not need protection. They believe that protection, so called, is but another term for Government assistance to monopolies and trusts. This position the Government as it now exists can ill afford to assume, nor can it allow the people to feel that it is drifting into such position where it is working hand in hand with gigantic trusts; for when the people realize such to be the condition they will undoubtedly arise in their might, and by their votes change the conditions and the Government which permits such conditions.

It is reasoned by the various manufacturers that as industries cease to be in a position where, with the cheaper labor, European manufacturers can threaten them, protecting duties should be removed on the score that they are no longer infant industries which need nursing along and protecting that they may grow.

In this way the many manufacturing interests using coal and coke and iron and steel, both cast and wrought, will be assisted, especially in this district, which has indirectly been taxed for the benefit of a certain district around Pittsburgh, and the stock market depending upon those interests, in doing a profitable business in this country, and especially abroad.

The advantages growing out of the greater intelligence on the part of workmen and of better machinery cannot be long enumerated as to the credit and benefit of America as compared with the conditions in Canada or in Europe, because these conditions are fast changing as the result of greater intelligence abroad and the rapid adoption of these machines by manufacturers in foreign countries. Much of the purchases of the latter has gone, so far, to swell the aggregate of the export trade of America, it being largely so far in the form of machinery to help the foreign countries with their cheaper labor, to produce in competition with this country. Again the growing tendency of trade unionism in this country is fast assuming proportions which threaten the supremacy in the use by Americans of the automatic machinery which has heretofore given them considerable advantage in enabling one operator to run many machines and thus offset largely the extra cost in higher priced labor. Union regulations, it is understood, are restricting their output per dollar of pay roll, by requiring an operator to each machine and the working of shorter number of hours per day, &c.

It is the belief of American manufacturers that as the foreign markets become filled up with America's improved machinery, America's export trade in machinery will begin to wane. Our export trade in articles of

manufacture of a more miscellaneous character, and on which there is a small value per unit or piece, such as hardware, stamped ware, rolled and dropped forged products, &c., should be increased to such an extent that the net result will not be a diminution but an increase in the total export trade. This is especially important because this will result in finding work for a much larger number of employees engaged in manufacturing for export trade, and consequently will defer the longer the coming of "dull times" in the manufacturing industries of America.

It is apparent to these numerous manufacturers who started the formation of manufacturers' associations, which associations altogether are acting as a body, that with high priced raw materials and labor restrictions tending to increase costs of production, the advantage and supremacy of these United States in the past is being neutralized or eliminated. To the extent to which this takes place the prosperity of this country as compared with other countries in the world will also gradually assume conditions which are nearer parallel, or on a par one with another, than they have been heretofore. It is with the desire to check this changing and adverse condition that the manufacturers' associations of America are taking up this subject. It is to be hoped that the Government of the United States will appreciate the position and make such changes in tariff regulations or duties from time to time as will result in putting upon the free list such commodities as do not further need protection on the score of their being infant industries.

It is the belief of manufacturers generally that the growing tendency for high prices, not only for raw materials, but for finished products and labor, is in a short time sure to result in a considerable check in the volume of business. This, in turn, will but result in a general business and financial reaction, which will bring about the sooner dull times, which manufacturers, financiers, laboring classes and all must suffer under. It is, of course, important that action be taken to delay the coming of this event, and yet that the action toward tariff revision be not carried to an extreme by putting on the free list more than here contemplated by the manufacturers.

THE WILMOT & HOBBS MFG. COMPANY,

F. A. WILMOT,

President and Treasurer.

BRIDGEPORT, CONN., April 29, 1901.

New Skelp and Pipe Mills at Steubenville.—Recently the La Belle Iron Works, at Wheeling, W. Va., increased their capital stock from \$800,000 to \$2,500,000. This concern have finished the building of a very modern skelp mill at Steubenville, and are about ready to place contracts for the building of a tube mill to make all sizes of steel tubes from $\frac{1}{4}$ -inch up to 8 inches in diameter. It is intended that the new tube mill will take the entire product of the skelp mill. The La Belle Iron Works are tearing out a good deal of the equipment of the old Jefferson Iron Works plant, and are taking out the old cut nail factory. The La Belle Iron Works own and operate Jefferson furnace at Steubenville, formerly operated by Jefferson Iron Works. The concern also operate a large cut nail factory at Wheeling, W. Va. It is their intention eventually to remove the entire plant from Wheeling to Steubenville.

Some Edgar Thomson Records.—Turn No. 2, of the converting department of the Edgar Thomson Steel Works, of the Carnegie Steel Company, at Bessemer, recently broke all previous records by making 121 heats in 12 hours, with a total of 1770 tons. We may note that one of the Edgar Thomson furnaces at Bessemer will in a couple of weeks have made more than 1,000,000 tons of pig on one lining. This is a record that never before has been made in this country by any blast furnace, or probably abroad. The furnace is in fair shape and may continue in blast for some little time yet.

Lake Ore Prices.

DULUTH, April 27, 1901.—A few comparative figures of standard Lake Superior ores for the past few years and for 1901 will be of interest, and are presented herewith.

The base price—that is, for a supposititious ore running 63 iron, 0.045 phosphorus and 10 per cent. moisture, was in 1898, \$2.75; in 1899, \$2.95; in 1900, \$5.50, and in 1901, \$4.25.

	1897.	1898.	1899.	1900.	1901.
Minnesota	\$3.11	\$3.36	\$3.45	....	....
Chandler	2.92	3.16	3.29	\$5.90	\$4.62
Pewabic	....	3.54	3.63	6.17	4.89
Pioneer	2.97	3.03	3.20	5.75	4.55
Aurora	2.80	2.95	3.07	5.62	4.47
Aragon	....	2.92	3.18	....	....
Granada	2.45	2.61	2.81	5.30	4.03
Montreal	2.77	2.98	3.23	5.89	4.63
Melrose	....	2.92	3.04	5.40	4.19
Lawrence	....	2.58	2.75	5.25	3.83
Iron Belt	....	2.77	2.80	5.76	3.99
New Era	....	2.64	2.83	4.96	3.92
Chapin	2.40	2.56	2.73	4.96	3.78
Palm	2.57	2.60	2.68	4.90	3.72
Atlantic	2.50	2.75	2.87	5.54	4.30
Millie	....	3.19	3.35	6.06	4.68
Champion	2.90	3.10	3.21	5.93	4.66
Harvard, Bessemer	2.68	2.73	2.93	....	....
Lake, Bessemer	2.73	2.85	3.03	5.44	4.31
Abbotsford	....	....	....	6.10	4.86
Brotherton	....	2.74	2.96	5.64	4.39
Republic, spl.	3.40	3.65	3.86	6.87	5.65
Republic, spec.	....	3.32	....	....	4.92
Republic, Kings	2.99	3.17	3.38	6.11	4.41
Norrie	2.55	2.75	2.99	5.50	4.25
Princeton	....	2.71	....	....	3.71
Anvil	....	....	....	....	4.02
Ashland	2.66	2.80	2.96	5.36	4.12
Abbotsford	....	....	....	....	4.86
Sauntry	....	....	....	....	2.50
Audrey	....	....	2.10	4.25	2.35
Elba	....	....	2.15	4.10	2.85
Sparta	....	....	....	....	2.85
Stevenson	....	....	....	....	2.75
Roberts	....	....	....	....	3.00
Fayal	....	....	....	4.80	....
Adams	....	....	....	4.85	....
Genoa	....	....	....	4.90	....
Mountain Iron	....	....	....	4.40	....

The foregoing in a general way covers the range of prices, though many grades, especially Mesabas and Menominee, Non-Bessemers, are not mentioned. The former generally follow the few mentioned in the 1900 column with the differential of the year, and the latter are at about \$4 for standard. Many of the standard ores, of all ranges, are withdrawn from rate, and some of these get a quotation, while others do not.

D. E. W.

The United States Steel Corporation.

(By Telegraph.)

PITTSBURGH, PA., May 1, 1901.—The United States Steel Corporation have decided that the main offices of each of the constituent companies shall be moved from New York and located as near the principal plants of the constituent companies as possible. For this reason the general offices of the American Tin Plate Company, the American Sheet Steel Company, the American Steel Hoop Company, and the National Steel Company will likely be moved in the near future from New York to Pittsburgh.

Some changes in the McKeesport offices of the National Tube Company went into effect May 1. Taylor Allderdice, who has been manager of the works at McKeesport, resigned, and has been appointed as assistant to First Vice-President W. B. Schiller, in the Pittsburgh offices. Mr. Allderdice has been succeeded as manager of the McKeesport plant by George G. Crawford, formerly one of the superintendents of the Edgar Thomson Steel Works at Bessemer. Mr. Allderdice upon leaving McKeesport was presented by the office force with a diamond studded gold watch, and by the employees of the tube works with a magnificent parlor suit.

Bolling & Lowe, 2 Lawrence Pountney Hill, E. C., London, have become the agents of the Thornton N. Motley Company, Incorporated, New York.

OBITUARY.

THEODOSIUS F. SECOR.

Theodosius F. Secor, a pioneer shipbuilder and engineer of New York, died April 30 at his home in Brooklyn, at the advanced age of 93 years. Mr. Secor was born in New York City, and when young entered the shops of the old Allaire Iron Works, where he studied marine engineering and the construction of engines generally. In 1835 he went to Havana, and there engaged in the making of engines for the operation of sugar mills. A year later he returned to this country and began the operation of a large plant of his own in partnership with Charles Morgan, who was afterward proprietor of the Morgan line of steamships. In 1838 he sold out to Mr. Morgan, who established the Morgan Iron Works. Following this he, in company with Commodore Cornelius Vanderbilt, obtained an interest in the Allaire Iron Works, in which he had served his apprenticeship. This partnership continued for a number of years, and the concern turned out some of the largest and finest vessels built at that period.

NOTES.

HUGH C. CAMPBELL, a pioneer of the iron industry of Pittsburgh, died April 26 at his home in Allegheny, Pa., aged 91 years. He was born in Ireland, and came to this country when a child. Mr. Campbell was connected with the Miller Forge & Iron Company, and subsequently with the Pittsburgh Forge & Iron Company.

MARION BRIGGS, head of the firm of Marion Briggs & Co., manufacturers of machinery at Greenpoint, Brooklyn, died on April 24 at his home in that city, from heart failure, aged 74 years. He was a graduate of the University of the City of New York, and served through the Civil War.

The Drawback on Steel Strips.—Under date of April 19 the Treasury Department has rendered the following decision: On the exportation of steel strips manufactured by the Esterbrook Steel Pen Mfg. Company of Camden, N. J., in the manufacture of which are used imported steel sheets, the duty upon which is 2 cents per pound, a drawback will be allowed equal in amount to the duty paid on the imported sheets less the legal deduction of 1 per cent. The entry under which the merchandise is to be inspected and laden must show the marks and numbers of each shipping package and the contents therein, together with the number of pounds, gross, tare and net, contained in each. The drawback entry must show, in addition to the usual averments, that the exported articles were manufactured from the material and in the manner set forth in the manufacturer's sworn statement of March 8, 1901. In the liquidation of the drawback entry the quantity of sheet steel which may be taken as the basis for the allowance of drawback may be that declared in the drawback entry: Provided, however, that it shall not be less than 105 pounds of the imported material to each 100 pounds of the exported article, and the quantity exported shall be ascertained by the United States weigher, and samples furnished the collector of customs, Philadelphia, Pa., for such examination as he may deem necessary.

The Webster Coal & Coke Company, recently organized at Johnstown, Pa., have taken over the following properties: The Mitchell Coal & Coke Company, Gallitzin Coal & Coke Company, Chest Creek Coal & Coke Company, Beaver Run Land Company, Beaver Dale Water Company, Hastings Electric Light Company, Cresson Electric Light Company, Gallitzin Water Company and the Kittanning Coal Company. Several hundred coal cars and 500 coke ovens pass into the possession of the Webster Company, who will develop the coke feature of their business. W. A. Lathrop will be at the head of the new company.

Geo. W. Darr, the new president of the Sharon Steel Company, Sharon, Pa., in an interview stated that no deal was on for the taking over of Sharon Steel Company by the United States Steel Corporation.

PERSONAL.

Dwight H. Coble, for a number of years identified with the Carnegie Steel Company in the accounting department, and who has held the office of auditor in the Carnegie Company since their organization, has resigned to accept the position of secretary to James Gayley, first vice-president of the United States Steel Corporation, with charge of ore mining and transportation. Mr. Coble will remove to New York and assume his new duties within a few days. His successor as auditor of the Carnegie Company has not been appointed.

E. C. Crandall, of the land department of the Alabama Southern Railroad, has been appointed manager of the Central Iron & Coal Company, at Tuscaloosa, Ala.

O. P. Austin, chief of the Bureau of Statistics of the Treasury Department, left for Europe on Tuesday on Government business, which includes the gathering of statistics on the foreign commerce of the European countries, and also to attend the annual congress of European colonial officers at The Hague in June.

It is reported that W. G. Park, the steel manufacturer, of Pittsburgh, has bought a site in Washington, D. C., and will build a residence on it.

William A. Carty, who has been foreman in the planer and shaper department of the Pratt & Whitney Company of Hartford, Conn., has accepted a position as foreman with the Reliance Machine & Tool Company of Cleveland, Ohio, builders of the Morgan patent bolt cutters.

M. Jules Siegfried, a former Cabinet Minister of France, visited the various Carnegie works in and near Pittsburgh this week.

C. A. Sercomb has resigned the presidency of the Milwaukee Foundrymen's Association, having retired from the foundry business.

General Manager C. W. Prosser of the Southern Car & Foundry Company and E. W. Fuller, manager of the company's works at Memphis, Tenn., have resigned their positions. It is reported that they will engage in the car building business in St. Louis, Mo.

Charles L. Taylor, formerly assistant to President Charles M. Schwab of the Carnegie Steel Company, has been appointed head of the benefit and pension system for Carnegie employees inaugurated by Mr. Carnegie's \$4,000,000 gift for the purpose. Mr. Taylor is one of the veterans of the Carnegie establishment, having been superintendent of the Homestead plant, while serving in which capacity he met with an accident that nearly cost him his life. He was subsequently assistant to Presidents Leishman and Schwab.

Charles W. Davenport, long identified with the Western iron and steel trades, and for the past 20 years located in Chicago, has retired. Mr. Davenport first engaged in the iron business in 1853 in Boston, his native place, then in New York, and for several years in Sacramento and San Francisco. He will return to Boston and spend his remaining years with his sons.

William M. Lee, president, and Frank H. Whiffle, manager, of the Bignal Foundry Company, Medina, N. Y., have sold their interest in the concern to William B. Robbins and Henry Robbins, and will sever their connection with the company on July 1.

N. N. Pope, paymaster for the Tennessee Coal, Iron & Railroad Company, has resigned and will be succeeded by Mr. Loamen, formerly of the Minnesota Iron Company. John Fletcher, assistant treasurer of the Tennessee Company, has also sent in his resignation.

J. Fearon Mann has been appointed superintendent of the American Axe Company's factory at Reedsville, Pa., vice Frank E. Mann, resigned.

John H. Smith has resigned the superintendency of the rolling mill department of the Ohio plant of the National Steel Company, at Youngstown, Ohio. He has been succeeded as superintendent by Fred. Bennett, formerly with the Maryland Steel Company.

Paschal G. Shook, assistant general superintendent of the Tennessee Coal, Iron & Railroad Company's steel

works at Ensley, Ala., resigned his position on May 1. Mr. Shook was treasurer and secretary of the Alabama Steel & Shipbuilding Company prior to their absorption by the Tennessee Company.

William A. Scofield, formerly of the Norwalk Iron Works, has accepted the superintendency of the Norwalk Brass Company, Norwalk, Conn.

Charles I. Earll, mechanical engineer and patent expert, has removed his offices to the Bishop Building, 74 William street, New York.

The directors of the Tennessee Coal, Iron & Railroad Company have organized by electing Don H. Bacon chairman of the board; N. Baxter, Jr., president; F. S. Witherbee, vice-president; L. T. Beecher, secretary and treasurer, and Chas. Perdon, assistant secretary and treasurer. The Executive Committee will consist of James T. Woodward, E. R. Chapman, Albert B. Boardman, Fred. H. Benedict, James H. Smith, F. S. Witherbee, Cord Meyer and William Barbour. The Executive Committee has been reduced from ten to eight members, leaving out W. S. Gurnee, Jr., and D. J. McComb.

Stephen E. Coles, for 12 years managing editor of the *Electrical Review*, has resigned to associate himself with M. J. Shaughnessy in the business of preparing and publishing technical and trade literature. The new firm is located at Temple Court, New York.

E. P. Breckenridge, head of the E. P. Breckenridge Can Company of Toledo, Ohio, recently absorbed by the American Can Company, has accepted the position of general manager of the manufacturing department of the last named corporation, with headquarters in New York City. Karl S. Breckenridge, who has for some years been general superintendent of the Toledo plant, will continue there as manager for the American Can Company.

Glen Wright, who for several years has been the manager of the domestic business of the New York office of Rogers, Brown & Co., assumes a new relation on May 1 as partner in the house of William B. Wadsworth, who has been for many years a member of the New York Stock Exchange. The new firm will be known as Wadsworth & Wright, and will transact a general bond, stock, investment and banking business at 96 Broadway, New York.

E. E. Forgeus, formerly with the Chicago Lumber & Coal Company of St. Louis, has been appointed purchasing agent of the Pressed Steel Car Company of Pittsburgh.

W. L. Brown of Pickands, Brown & Co. and also president of the American Shipbuilding Company, returned Monday from a two months' tour through Europe.

Jesse W. Walker, retiring manager of the Pittsburgh district of the American Bridge Company, was presented with a silver service by his former employees.

In order to give his entire attention to his duties as a member of the Executive Committee of the United States Steel Corporation, Percival Roberts will probably soon resign the presidency of the American Bridge Company.

John Horner, formerly manager of the tin mills of the Granite City Tin Plate Company, at Granite City, Ill., has resigned and has been made superintendent of the new tin mills of the Sharon Tin Plate Company, at Sharon, Pa. A number of former employees of the Granite City mills will remove to Sharon, Pa., and will work in the new tin mills.

A report is current, which is not, however, officially confirmed, that G. G. McMurtry has resigned the presidency of the American Sheet Steel Company.

H. J. Hayden, assistant manager of the American Iron & Steel Mfg. Company's plant at Lebanon, Pa., has resigned his position from May 15.

The boiler workers at Youngstown, Ohio, met last week and have under consideration the matter of demanding an eight-hour day without any decrease in present rate of wages.

Enormous Engines.

(By Telegraph.)

PITTSBURGH, Pa., May 1, 1901.—The Westinghouse Machine Company of East Pittsburgh have just completed the largest stationary engine that has ever been built in America. This engine is one of eight 6000 horse-power engines ordered by the New York Gas, Electric Light, Heat & Power Company. When occasion demands these engines are capable of delivering 10,500 horse-power each. Some idea of the proportions of this monster engine can be obtained when it is said that more than 10,500 separate pieces of different kinds of metal were used in its construction, and that the whole engine completed weighs more than 1,500,000 pounds. The following are the dimensions: Height from floor line to the top of the cylinder, 37.25 feet; width across front, 41 feet; width from front to rear, 23 feet; diameter of fly wheel, 23 feet; weight of main shaft, 136,000 pounds; diameter of shaft, 26 to 29½ inches. For shipping the engine will require 30 cars. The base of this engine, cast in three pieces, weighs 100 tons. Upon this base are set the three A-frames, with irregular flange tops, upon which are set and bolted the cross head guide frames. These guide frames are in turn surmounted by the cylinders, one high pressure and two low pressure. Circumscribing the engine frame are three iron platforms, located at the junction of the A-frame with the cross head guide frame, the cross head guide frame with the bottom of the cylinders and the top of the cylinders, respectively. These three platforms are connected with each other by spiral iron stairways, and to the ground by means of a stairway descending from the lowest platform. Being of the three-cylinder cross compound type, this engine represents the best engineering practice as applied to large units. There is one high pressure cylinder, 43½ inches in diameter, and two low pressure cylinders, each of 75½ inches in diameter. The stroke is 60 inches and the speed 75 revolutions per minute. The high pressure cylinder has balanced poppet valves actuated by a releasing gear, and the low pressure cylinders Corliss valves operated by the usual wrist plate and tie rods. It should be noted that this is a comparatively rare combination of valves; the reason for using poppet instead of Corliss valves on the high pressure cylinders is that the entering steam at 175 pounds pressure is superheated 200 degrees, making the actual temperature 577 degrees F. At this temperature it is practically impossible to provide the efficient lubrication necessary to the satisfactory working of Corliss valves. The engine is condensing and a vacuum of 26 inches is maintained at all times. A reheating receiver is placed at the middle of the cross head guide frame and extends clear across the front elevation of the engine. This heater contains 110 tubs, giving a total of 1200 square feet of heating surface. The low pressure cylinders are steam jacketed to prevent the loss of heat energy by radiation.

An interesting departure from ordinary engineering practice is to be found in the way in which motion is given to the eccentrics that control the valve movements. Usually the eccentrics are mounted directly on the main shaft; in this instance the eccentrics are mounted on a lay shaft located at the rear of the engine, a few inches above the level of the first platform. This auxiliary shaft is driven by a spiral gear. The advantages to be derived from moving the eccentrics in this way are manifold; the chief one is, however, the saving of energy by reducing the size of the eccentric straps. The diameter of the main shaft is 29½ inches, the diameter of the lay shaft is 6 inches; the eccentric straps and the friction caused by their rubbing surfaces are reduced accordingly.

The main shaft is of open hearth, fluid compressed, hydraulic forged steel, the connecting rods are of the same material, and both were supplied by the Bethlehem Steel Company. The shaft is 29½ inches in diameter at the fly wheel fit and 26 inches diameter at the bearings; it has a 10-inch hole through the center of that portion located between the bearings and a 9-inch hole at the bearings. The total weight of the main shaft is 136,000 pounds.

The fly wheel center is of air furnace iron, the arms and rims of cast steel. The central portion is cast in five segments, each consisting of two arms and 72 degrees of the rim. These are joined by I-links shrunk into pockets in the sides and are bolted to the hub, making a cast steel fly wheel 23 feet in diameter. The rim is strongly reinforced in such a way as to give practically three rings running together, each self supporting as to centrifugal force.

The generator armature is pressed onto the shaft alongside the fly wheel, and in addition to being securely keyed to the shaft it is rigidly attached to the fly wheel center or hub by means of direct bolting. The outer end of the generator shaft is supported by a heavy pedestal carried on an iron subbase. Though this engine is somewhat more powerful than either of the two recently built for the Bay Ridge Station of the Kings County Light & Power Company, the fly wheel is considerably smaller, a construction possible in this case because the cranks are arranged in the best position to give an even turning moment—cranks being separated by 120 degrees—a condition that is not possible to attain in any two-cylinder engine.

Work has already commenced on several of the other 6000 horse-power engines for the New York Gas, Electric Light, Heat & Power Company, and the machine shops of the Westinghouse Company are being worked to their full capacity. In addition to this order the Westinghouse, Church, Kerr & Co. engineering firm have secured the contract for and the Westinghouse Machine Company are building eight engines of 5000 horse-power each for the Third Avenue Railway of New York, two of the same capacity for the Boston Elevated Railway and two of 1500 horse-power each for Manchester, England.

Large Sale of Alabama Coal Lands.—At a special meeting of the stockholders of the Virginia & Alabama Coal Company, owned by J. B. Pace and other Richmond (Va.) capitalists, held at Birmingham, Ala., on April 30, a controlling interest in the company was sold to J. B. Finley and others of Pittsburgh, representing the Monongahela Coal Company of that city. The Pittsburgh Company have also bought the Southern Coal Company, and negotiations have been concluded practically for the purchase by the same parties of the properties of the Corona Coal & Coke Company. These three companies control the coal output of Walker County, Ala., and within the last two years have cut deep into the coal trade of Pittsburgh on the Lower Mississippi River, having sold last year 300,000 tons of coal in that market. The purpose of the Pittsburgh Company is to monopolize this trade territory. By these purchases they have succeeded practically in doing it. The several deals involve \$3,000,000. The Pittsburgh Company agree to continue the operation of the mines, which are on the line of the Southern Railway, but it is understood their output will be diverted to other markets.

The master tinnings of Pittsburgh have signed the scale of their journeymen, fixing wages at 32 cents per hour for eight hours a day. This is an advance of 4 cents per hour over the original proposition made by the master tinnings, but is also 2 cents an hour less than demand fixed by the men, which was for 34 cents an hour.

John B. Roach, president of the Delaware River Iron Shipbuilding and Engine Works, at Chester, denies that his company have entered into any negotiations toward the consolidation of the large shipyards in this country for the protection of their individual interests in the bidding for Government contracts.

The British (Griffin) Chilled Steel Company, Limited, have commenced operations at their new works at Barrow, England. Their object is to produce chilled wheels, axles, rolls, &c., and general castings, and they have already acquired a big business in the purchase of the British trade hitherto carried on by the American Griffin Company.

MANUFACTURING.

Iron and Steel.

We may state officially that it is not the intention of the National Tube Company to proceed with the work that was planned at one time for Wheeling, W. Va., except that the company will complete the blast furnace, the building of which was started almost a year ago.

The National Steel Company, Ohio Works, Youngstown, Ohio, have received an order from Missouri Pacific Railroad for 10,000 tons of standard steel rails.

The report that the National Steel Company will erect a new bar mill at the Aetna-Standard Works, at Bridgeport, Ohio, is incorrect.

At Youngstown, Ohio, the Pittsburgh & Lake Erie Railroad have transferred to the Youngstown Iron Sheet & Tube Company 15 acres of land below Hasletton, and received a like amount from the Tube Company. The transfer will allow the railroad to straighten a curve in the line and will also suit the Tube Company better.

The Plymouth Rolling Mills, E. Stanford, proprietor, Conshohocken, Pa., are now in active operation. Muck bar and iron and steel sheets are now being rolled for the general market.

Pratt & Inman, iron and steel merchants, Worcester, Mass., are having plans prepared for a large addition to their iron warehouse on Foundry street. It will cover about 7000 square feet.

The Paige Woven Wire Fence Company, whose plant is at Monessen, Pa., near Pittsburgh, will make some important improvements. The capacity of the rod mill is to be increased 50 tons a day, and the output of the wire mill will also be enlarged. Six new looms are to be added to the works, so as to increase the output of wire fencing, making a total of 21 looms at these works. It is possible the company may erect a blast furnace in the near future, in order to make metal for their own open hearth steel plant.

No. 4 stack of the Carrie group of the Carnegie Steel Company, at Rankin Station, Pa., was started last week. Mrs. W. E. Corey, wife of the president of the Carnegie Steel Company, applied the match. The starting up of this stack gives the Carnegie Steel Company a complement of four furnaces at Rankin Station, two of which are moderate sized furnaces, but which will be rebuilt and made to conform to the new stacks Nos. 3 and 4. When Nos. 1 and 2 have been rebuilt, these four stacks will have a daily capacity of about 700 tons each. In fact, it is expected that these four furnaces will turn out close to 3000 tons of metal per day.

Belmont Furnace of the Wheeling Steel & Iron Company, at Wheeling, W. Va., is ready for blast, and will likely be lighted this week. The furnace has been relined, a new skip hoist built and the engines and equipment overhauled and improved. The furnace has been out of blast about two months while these repairs were being made.

The débris of the recent fire at the Crum Lynn Iron Works, Chester, Pa., has been cleaned up and a general inspection made of the remains of the plant. Some of the heavier machinery, the rolls and housings and the furnaces are found to be but little damaged, and the plant has much that is still valuable. The insurance received will enable the owners to rebuild the buildings in their former shape and the work of reconstruction will soon be started.

The Poughkeepsie Iron Company's furnace at Poughkeepsie, N. Y., has started up after an idleness of some ten months. The large stack is in operation, and the old stack, which has been repaired, will shortly be started.

The Reading Iron Company of Reading, Pa., are about to spend \$50,000 in improving their Danville plant. Nine of the heating furnaces will be supplied with new upright water tube Cahall boilers, and those over the 21 puddling furnaces will be replaced by horizontal boilers of a most approved type. The installation of these boilers, which are larger than those now in use, will necessitate the raising of all the lower section of the roof covering both mills. Two artesian wells will also be sunk. The work in progress will be so arranged that but two furnaces will be affected at one time, so that operations may continue with but little inconvenience.

The tin plate dipping plant of John Hamilton, located in Hazelwood, Pittsburgh, was completely destroyed by fire on Monday, April 29. It is probable the plant will be rebuilt on a larger scale.

The Falcon Works of the American Sheet Steel Company, at Niles, Ohio, started up Monday, April 29. The sheet bar, forge and sheet mills are now running and the skep mill will start next week.

The Schonthal Iron & Steel Company, Cumberland, Md., have incorporated with a capital of \$200,000 to operate the Cumberland Rolling Mill, the rail mill of the Potomac Steel Company, which was given in charge of John Schonthal of Columbus, Ohio, early in March by the receiver of the latter company. The mill will be started at once in the manufacture of light rails running from 16 to 40 pounds, and in about 60 days the manufacture

of rails from 8 to 40 pounds will be begun, orders having already been given for the necessary equipment. The company have abundant capital to properly conduct the business, and the mill will start up with a capacity of about 100 tons per day and a force of about 100 men.

Some laborers employed at the new blast furnace being built by the National Tube Company, at Wheeling, W. Va., have gone out on strike, demanding \$1.50 a day for ten hours. They have been paid at the rate of \$1.40 a day for 10½ hours.

James A. Campbell of Youngstown, Ohio, trustee of the Continental Iron Company, has presented three propositions to L. F. Hunter, referee in bankruptcy. One is to sell the Wheatland mill, another is to expend money in improvements and start it in operation, and the third to accept his resignation to take effect July 1.

Machinery.

The Brown Hoisting Machinery Company, Incorporated, Cleveland, Ohio, have recently sold some hoisting machinery to Oxelosund, for the purpose of handling Swedish ore.

The Pittsburgh Valve, Foundry & Construction Company have recently sold a small piece of property in the First Ward, in Pittsburgh, to the Pittsburgh & Carnegie Railroad. This land with a large amount of other ground is to be used as an entrance of the Wabash road into Pittsburgh.

The Weisenborn Mfg. Company have been incorporated at Indianapolis, Ind., for the manufacture of fence machines, woven wire fencing and farm and lawn gates, by G. P. A. Weisenborn, W. C. Kincaid, C. E. Davis and W. D. Whitmore. The capital stock is \$125,000.

The Kewanee Boiler Company, Kewanee, Ill., have already found it necessary to make enlargements of the extensive new plant which was completed last fall. Their business has expanded so rapidly that they are now building an addition to the south end of their main building. This extension will be 40 x 96 feet, and, like the main building, will be composed of brick walls with a steel truss roof. It will be used by the sheet iron department. The quarters at present occupied by this department will be used for the enlargement of the boiler department. The company will install another large hydraulic riveter and will then have four machines of this character, which will enable them to turn out a great deal more work.

The Republic Iron & Steel Company have recently contracted for an automatic steam flying billet shear for the billet mill now under construction for their Brown-Bonnell plant, Youngstown, Ohio. The contract was placed with Morgan Construction Company, Worcester, Mass.

Crane Company, Chicago, manufacturers of valves, fittings, &c., have decided to erect this summer a modern fire proof building exclusively for offices. It will be about 90 x 100 feet, five stories and basement, and will be located in the vicinity of their large cast iron and malleable fitting and valve works, at Canal and Twelfth streets.

The Hartley Boiler Works, Montgomery, Ala., are adding a foundry to their boiler plant. The building is 60 x 35 feet. The required machinery is of the latest pattern. The house has been uninterruptedly busy for three years past.

The Keystone Driller Company have decided to double the capacity of their plant at Beaver Falls, Pa., by the erection of three large buildings, and to go into the manufacture of large sized portable machinery for deeper drilling. Ground on either side of the works has been purchased upon which a 60 x 100 foot addition to the boiler shop, a 40 x 100 foot addition to the wood working department, and a 40 x 200 foot addition to the erecting department will be built. There will also be added to the present plant and new buildings lathes, drill presses, wood working machinery, gas engine and dynamos. An electric light plant will be installed, which will be a new feature attached to the works. The class of machinery turned out by this company at present is used for testing placer ground for gold, testing for lead and zinc, coal and other minerals, and for drilling water, oil and gas wells any depth up to 1500 feet. The plans for a 2500-foot machine are about completed, which will be an addition to the present machinery made.

The Elliott Machine Company, 7-11 Erie street, Grand Rapids, Mich., who recently incorporated, have purchased the plant and business of the Elliott Button Fastener Company, and will continue the manufacture of Elliott automatic button attaching machines and Sampson seam stapling tools and staples, including belt power machines for factory use. The officers are C. S. Hazeltine, president; Wm. E. Elliott, vice-president; E. A. Stowe, secretary; O. J. Balfour, treasurer; T. J. O'Brien, counsel.

Heck & Marvin Machine Works, Findlay, Ohio, suffered a \$2000 loss by fire April 13, partly covered by insurance.

The Steam Appliance & Supply Company, St. Louis, Mo., recently incorporated, will in the near future manufacture a line of steam specialties, to consist of feed water heaters, steam and oil separators, and automatic drainage systems to be connected to the same. At present they represent the Western Paul Steam System Company, and are agents for the Ideal engine. It is probable that before long they will either buy an existing plant or erect one of their own.

The Vulcan Iron Works Company, Seattle, Wash., manufacturers of all classes of machinery, have in course of construction at their plant seven fore and aft compound marine engines; 12 large roadengines, for logging purposes; one 60-inch gang edger, weighing 13,000 pounds, and a miscellaneous lot of agricultural and other work. They are overhauling three United States revenue cutters, and a considerable amount of other repair work. The company report far more work in hand than they are able to handle.

The American Well Works Company, Aurora, Ill., have purchased the 25 feet of ground between their foundry and machine shop, which was occupied by the Lloyd Pop Works. As soon as possible the company will erect modern buildings to replace the old ones now in use.

The National Machinery Company, Tiffin, Ohio, manufacturers of bolt, nut, wire, nail and special machinery, have purchased the property formerly occupied by the O'Brien Wagon Works, which were destroyed by fire. As soon as the ruins are cleared away work will be commenced on a large building to be used as an addition to the company's foundry, which will be equipped with modern and improved appliances for the expeditious and economical handling of work.

N. C. Stoner, late of McJunkin & Stoner, is erecting a new shop at Sistersville, W. Va., preparatory to engaging in the new and second-hand oil well machinery business.

C. H. Brown & Co., Fitchburg, Mass., builders of Brown automatic cut-off steam engines, will build a brick erecting shop, 40 x 80 feet, one story, in the rear of their main building, which will be equipped with an overhead traveling crane running the entire length, to handle heavy castings. Among the engines now in course of construction at the Brown Works are one 750 horse-power cross compound condensing engine, for Houghton County Street Railway Company, Hancock, Mich.; one, the same size and style, for the Lowell (Mass.) Electric Light Company; a 500 horse-power cross compound condensing engine for the Brockton & Plymouth Street Railway Company, and a large compound condensing engine for the Calumet & Hecla copper mines. All these engines are for direct connected electrical work and are made with heavy tangent frames.

Ray & Taylor, machinists, Auburn, Maine, have dissolved partnership. Fred P. Taylor will continue the business under his own name.

The Cleveland Crane & Car Company of Cleveland have just filled an order for two 5-ton motor electric traveling cranes for the J. S. Cooley Foundry Company of Mt. Vernon, Ohio. They report that they are considerably behind on orders for cranes.

The Wellman-Seaver Engineering Company of Cleveland have closed a deal with the Guardian Trust Company for the purchase of a 7½-acre piece of property facing Giddings avenue, Central avenue and the Pennsylvania Railroad tracks, that city, which will be used as a site for their new plant, which has been referred to in these columns. The price paid for the property was \$54,054.

The Hamilton Machine Tool Company, Hamilton, Ohio, are making shipments of drills and lathes to Glasgow, Scotland.

Pawling & Harnischfeger, manufacturers of traveling cranes, Milwaukee, Wis., report the outlook for business very bright. They are receiving so many inquiries that a large influx of orders is indicated. Among the orders very recently booked are the following: American Sheet Steel Company, Wellsville Works, Wellsville, Ohio, one 30-ton with 5-ton auxiliary hoist, and one 10-ton; Anheuser-Busch Brewing Association, St. Louis, Mo., one 20-ton and one 5-ton, for power plant and pumping station; American Clay Working Machinery Company, Bucyrus, Ohio, two 20-ton and one 15-ton; American Bridge Company, Philadelphia, Pa., one 8-ton for their Post & McCord branch, Brooklyn, and one 25-ton and one 8-ton for their Trenton branch; A. & P. Roberts Company, Pencoyd, Pa., one 25-ton with 5-ton auxiliary hoist; Curtis Sheet Steel & Corrugating Company, Zanesville, Ohio, one 20-ton; Frankford Steel & Forging Company, Eddystone, Pa., one 10-ton; Oesterreichisch-Alpine Mantangenschaft, Vienna, Austria, one 5-ton; La Belle Iron Works, Steubenville, Ohio, three 5-ton 100-foot span and two 5-ton 80-foot span; New York Shipbuilding Company, Camden, N. J., one 15-ton double trolley; Nordberg Mfg. Company, Milwaukee, Wis., two 30-ton and two 10-ton; Philadelphia & Reading Railway Company, Pottsville, Pa., one 25-ton with 5-ton auxiliary hoist and one 30-ton double trolley; Puget Sound Naval Station, Bremerton, Wash., one 10-ton; Wheeling Steel & Iron Company, Wheeling, W. Va., two 10-ton; Sharon Steel Company, Sharon, Pa., one 5-ton; Parkersburg Steel & Iron Company, Parkersburg, W. Va., one 25-ton with 5-ton auxiliary hoist; North Mount Lyell Copper Company, Crotty, Kelly's Basin, New Zealand, one 40-ton with 5-ton auxiliary hoist; Laughlin Nail Company, Wheeling, W. Va., one 20-ton; Chandler & Taylor Company, Indianapolis, Ind., one 10-ton.

The John F. Myers Machine Company of Ravenna, Ohio, are shipping three large stationary engines to the Klondike Thawing Company at Dawson City, Alaska.

The McMyler Mfg. Company of Cleveland, who are erecting a new plant at Warren, Ohio, have completed their plans for their power house, and within the next few days will ask for bids on engines, boilers and electrical equipment.

The Marion Steam Shovel Company of Marion, Ohio, are preparing plans for the erection of a blacksmith shop which will be 225 x 80 feet. It will adjoin their new foundry, which has recently been completed.

The Hardie-Tynes Foundry & Machine Company, Birmingham, Ala., whose manufactory was destroyed by fire on January 24, are erecting a new factory, made up of machine shop, foundry, pattern shop, storeroom and office building, at Eighth avenue and Twenty-eighth street. The foundry and machine shop will each be 100 x 160 feet at first. It is intended to extend both of them within a short time to 300 feet in length. The pattern shop will be 50 x 60 feet, of two stories. Power house will be 45 x 45 feet. Since the fire the company have been taking orders, and by the time the factory will be in operation, on June 1, they will have all the work that can be attended to. Throughout the whole of the works the equipment will be on the most modern principles.

The Birmingham Boiler Works, Birmingham, Ala., are running time and half. They are now erecting a stand pipe 20 feet in diameter and 80 feet high for the Alamo Iron Works, San Antonio, Texas; four oil tanks 20 feet in diameter and 30 feet high, for the Itasca Cotton Seed Oil Company, Itasca, Texas, and a steel stand pipe 14 feet in diameter and 100 feet high for the West Power & Light Company, West, Texas.

The B. F. Sturtevant Company of Boston, Mass., are rapidly recovering from the effects of the fire of April 14, which affected only the engine and electrical departments. With only a few days' delay incident to the renewal of belts, the remainder of the plant has been running as usual. Already complete new equipment of improved machine tools is nearly installed in other buildings. As the Sturtevant Company employ electric transmission for the driving of a considerable portion of their tools this work of installation has been a comparatively simple matter. Further delay in shipment of engine and electrical work is unlikely, for no patterns or drawings were destroyed, and the foundry with a large stock of castings is intact.

The James Lappan Mfg. Company of Pittsburgh applied for a charter on April 29. The new corporation will take over the business of James Lappan & Co., boiler makers, located at Twenty-eighth and Pike streets, Pittsburgh.

A. E. Olmstead, proprietor of the Ontario Iron Works, Poughkeepsie, N. Y., is erecting a new machine shop of brick, two stories, 70 x 54 feet, which will be equipped with new machinery of latest design.

Rosser & Castoe, general contractors, have purchased the Standard Boiler & Bridge Company's works at Bellaire, Ohio, which concern will be run by them under the name of the Bellaire Boiler & Structural Iron Works. Since April 1 the firm have received the following contracts: New water system, Washington Navy Yard; a complete water works and sewage system at Ocean City, Md.; water works system, Laurel, Md.

The Camden Anchor-Rockland Machine Company, Rockland, Maine, manufacturers of anchors, marine and stationary gasoline engines, &c., are erecting a one-story building, 100 x 40 feet, for a brass and iron foundry and boiler shop.

The Rochester Steam Motor Works, Rochester, N. Y., manufacturers of steam motors, valves and appliances, who recently incorporated, have secured a plant for the manufacture of their line. The officers are F. W. Zimmer, president and treasurer; Geo. B. Watkins, vice-president; L. S. Foulkes, secretary; Wm. T. Fox, superintendent.

Buildings and Bridges.

We note the securing of contracts by Milliken Brothers for large railroad terminals and shops for a prominent railway in Mexico, including tools and complete equipment; further orders for railroad bridges for another road, also in Mexico; additional bridge orders from still another railroad in Central America, and railroad bridges for two railroad companies in Cuba. They have also taken the contract for a fire proof theatre building for a prominent city in Mexico. In the line of domestic business, contracts have also been secured by them for the erection complete of a large rolling mill plant in this country, including piling, dredging, mason and other work; for the structural and ornamental iron for a dry goods store; for a fire proof hotel building, both in New York City, and for a large warehouse building, the framework of which will consume about 4000 tons of material.

The Wilmington (Del.) City Railway Company have awarded to Patrick Fahey the contract to build a new power house along the Brandywine River, to cost \$150,000.

The new East River Bridge Commission have opened bids for the construction of the steel suspended structure of the bridge now building. There were only three bidders: The Pennsylvania Steel Company, who have the contract for the approaches; the King Bridge Company of Cleveland, Ohio, and the Eastern Tube Company of 26 Broadway. The amount of steel required is about 7800 net tons. The Pennsylvania were lowest, with a bid of \$1,123,400. The other bids were \$1,151,500 by the King Bridge Company and \$1,264,000 by the Eastern Tube Company. The bids were referred to the chief engineer. The provisions of the contract call for the completion of the work within eight months.

of the time when the chief engineer calls for the work. This will not be before the close of this year.

The Erie City Iron Works, Erie, Pa., have given to the Cambria Iron Company of Johnstown, Pa., a contract for a new building about 550 x 122 feet.

The King Bridge Company, Cleveland, Ohio, engineers and builders of bridges and structural work, are constructing for the United States Government four military highway bridges on the Santiago and San Louis Road. The bridges are small, ranging from 40 feet to 70 feet in length.

The Pencoyd plant of the American Bridge Company shipped during March 7539 tons. We believe this is the largest shipment ever made by any bridge shop in the world.

The Fort Pitt Bridge Company of Pittsburgh, with works at Washington, Pa., have received a contract from the National Glass Company for the steel structural work for the new buildings which the latter concern will erect at Cambridge, Ohio. One of these buildings will be 100 x 180 feet, another 60 x 100 feet, and four others each 70 x 100 feet, all one story high. The walls will be of brick and the floors of concrete.

Foundries.

The annealing department of the Marion Malleable Iron Works, Marion, Ind., suffered a \$4000 loss by fire on April 9, which was fully covered by insurance.

James Haley is erecting a brass foundry, 35 x 20 feet, on East Main street, Orange, Mass.

The Metal Castings Company, Springfield, Mass., who are capitalized at \$150,000, have made a proposition to the Board of Trade of North Adams to locate their foundry in that city. The company are to manufacture castings by a patented process which they claim as good and as cheap as brass. The officers are Edward P. Chapin, president; Arthur I. Nash, vice-president; W. Fred. P. Fogg, treasurer; Frederick Carpenter, secretary; Moro D. Stebbins, superintendent.

Hardware.

American Silver Company, Bristol, Conn., are intending soon to embark in the manufacture of table cutlery. For this purpose they are now erecting an addition to their silver department.

The Springfield Wire Screen Company, Springfield, Ill., advise us that they are making a special effort to put upon the market window and door screens that will be absolutely fly and mosquito proof. All tops of their window screens are rubber cushioned, and the wire is of special design and gauge. The name Anti-Malarial is given this product.

The citizens of Terre Haute, Ind., are raising a bonus of \$25,000 to secure the location of a granite ware factory in that city.

The Chillicott-Evans Chain Company, Allegheny, Pa., will enlarge their plant for the making of chain. The company have been granted permission by councils of Allegheny to put up new buildings.

The Hartman Mfg. Company of Ellwood City, Pa., manufacturers of Hartman's steel and wire specialties and wire fencing, have received large contracts for wire fencing for export to Australia and Ecuador. The company have sufficient orders on hand to operate their plant to full capacity until July 1. This company have recently been reorganized, but the capital stock has not been increased to \$500,000, as reported. Wm. L. Kiefer is secretary and treasurer and Willis Elton is general sales manager.

The factory of the Seamless Metal Ware Company of Ossining (formerly Sing Sing), N. Y., which was absorbed by the American Can Company, and who are dismantling that plant, has been rented by the Metal Furniture Company, just incorporated, for the purpose of making iron and brass bedsteads and other furniture wholly or in part of metal. The principal financial interests of the Seamless Company are behind the new company, its president, W. L. Goodrich, having been manager of the old company. The secretary and treasurer is M. E. Goodrich, now treasurer of the Empire Drill Company of Shortsville, N. Y. The company expect to be in operation by July 1.

The Dillmick Pipe Company, Birmingham, Ala., manufacturers of cast iron pipe, report having an unprecedented pressure of business, as shown by the fact that where they received orders for hundreds of tons of pipe in the not very distant past they are now having orders for 5000 and 10,000-ton lots. Work now in progress includes contracts for the cities of Indianapolis and Evansville, Ind.; Philadelphia, Pa.; Seattle, Wash., and more than a dozen cities in the State of Texas. In the foreign department they have lately shipped to Havana, and they are now shipping to the City of Mexico. The company have within a short time commenced to manufacture valves and hydrants, and so far have had large sales in this line.

A. C. Williams, Ravenna, Ohio, reports the demand for sad irons as strong as ever. Usually there is a lull in the demand at this time of year and the company turn their attention to the manufacture of toys, but this year the business is holding up steady. They report that their foreign business has fallen off somewhat, caused by the almost prohibitory duty on American goods in Russia. Heretofore they have shipped large quantities of their goods to that country.

The Metal Goods Mfg. Company, Cleveland, Ohio, manufacturers of metal toys, are making their first shipment of tricycles. They are producing toy wagons at the rate of 1000 per day, and wheelbarrows in slightly smaller quantities.

The Garland Chain Company, Rankin Station, Pa., have just about completed the putting up of two new buildings, one 150 x 100 feet, and one 100 x 200 feet. These buildings were erected by the American Bridge Company of Pittsburgh.

The Summitt Wire Company, Cuyahoga Falls, Ohio, are adding some additional machinery and are also, as noted in these columns recently, utilizing water power, thus greatly increasing the power by which they operate their mill. This concern are makers of annealed, bright and coppered market wire, tinned mattress and tinned broom wire.

Miscellaneous.

The Stanton Heater Company, Martin's Ferry, Ohio, manufacturers and installers of Stanton's seamless warm air furnace, have received a contract from the Wheeling *News* of Wheeling, W. Va., to heat their large six-story building by their indirect steam system. They have also closed a contract with Locke Shoe Company of Wheeling, W. Va., to heat their large new building by their warm air system. The Stanton Heater Company regard the outlook for a large season's business as very bright. Their furnace is gaining for itself a splendid reputation, and is universally liked wherever used.

The American Car & Foundry Company have received the following orders for new cars: Pere Marquette, 800 cars; Quincy Mining Company, 4 flat cars, and Southern Missouri & Arkansas, 10 cars. The Cudahy Packing Company are reported to have ordered 215 refrigerator cars from the same company. The following orders have been placed with the Pressed Steel Car Company: Chicago & Alton, 10 furniture cars, and the Lake Superior & Ishpeming, 25 box cars. The Southern Railway is asking bids on 100 more box cars; the Central of Georgia will build at its own shops 300 box cars; the Norfolk & Western is building 500 box cars at its Roanoke shops; the Canadian Pacific is practically rebuilding 800 box cars at its shops; the Chicago, Milwaukee & St. Paul will build 1000 box cars at its own shops; the Minneapolis, St. Paul & Sault Ste. Marie is in the market for 300 box cars; the Southern Pacific has ordered 101 ballast cars; the Northern Pacific is reported in the market for a large number of passenger cars; the Mobile, Jackson & Kansas City is reported in the market for passenger equipment. The Pittsburgh & Buffalo Coal Company have ordered 150 coal cars; the Central Vermont is in the market for 50 double hopper coal cars; the Morenci Southern has ordered six hopper bottom steel cars. The Chicago & Southwestern is reported in the market for six or eight locomotives; the Minneapolis, St. Paul & Sault Ste. Marie is having three engines built; the Quebec Southern has ordered one engine from the Baldwin Locomotive Works; the Chicago Junction has ordered two engines; the Union is having two engines built; the Buffalo, Rochester & Pittsburgh has ordered two engines built; the St. Lawrence & Adirondack has ordered three engines; the New Zealand Government Railroads have ordered one engine; the Southern Pacific has ordered 103 Vauclain compound locomotives; the Pere Marquette has ordered one passenger and nine freight engines; the Central of Georgia has ordered five consolidation engines.

The W. J. Clark Company of Salem, Ohio, general sheet and plate steel workers, have just filled a second order from the General Electric Company for 250 steel barrels, which have been found to be cheaper and better for use in shops than wooden ones. The W. J. Clark Company have a full equipment of special machines for making them rapidly in superior style.

The Cleveland Car Company of Cleveland have received an order amounting to \$3000 for brick cars for a manufacturing and mine developing company at Winnipeg, Canada. The company report sufficient business on hand to keep them busy for several months, and they are making a number of changes and additions to their equipment which will increase their facilities considerably.

The Southern Cement Company, Birmingham, Ala., made first shipment of their product on March 10, and have been kept busy right along since then, running 15 hours a day. Capacity of the works at the present time is 600 barrels of cement per day, and orders are now out for machinery which will double the capacity when installed. Among contracts being filled is one with the Hardy-Tynes Company, Birmingham, in the erection of their new foundry and machine shop, and another to furnish cement for the new rail mill of the Tennessee Coal & Iron Company at Ensley. The company make two grades of cement, one high grade Portland, which they consider equal to any other, and a high grade hydraulic cement, which they state has been demonstrated by actual test to be superior to any other hydraulic cement on the market.

The A. J. Hewlings Company, 86 Lake street, Chicago, dealers in asbestos goods and pipe coverings, and agents for the Ashton Valve Company, Boston, Mass., have discontinued their business. A. J. Hewlings will associate himself with a company piping oil wells in the West. F. Cecil Davis, formerly of the Davis Packing & Engineering Company, 84 Lasalle street, Chicago, has been appointed manager of the Chicago branch of the Ashton Valve Company, and the office will be retained at 86 Lake street.

The Iron and Metal Trades.

The buying hunger is appeased, and in many directions the tonnage of new orders has fallen off considerably, as it could not otherwise be after so prolonged and heavy a purchasing movement. Pittsburgh reports further sales of Basic Pig Iron, and it is intimated that the leading interest will soon take quantities of Bessemer Pig for the second half, for which little has been done so far. Apparently there is also a reserve buying power in Forge Irons.

On the other hand, Cincinnati reports at least one round transaction in Southern Pig Iron, on the basis of \$11.25 for No. 2, at Birmingham, against \$11.75, which has recently ruled. Eastern Pennsylvania, too, displays some irregularity in prices of Foundry Iron.

The Steel market is quiet, and \$24 for Billets is the basis of the moderate business which is going.

The Steel Rail mills have taken a heavy tonnage, all the buyers having been given an opportunity to put in their orders before the advance. Some of the mills have been forced to turn away orders in considerable quantity because of their inability to roll the Rails in time. The explanation which is being made in the trade of the recent advance in Rails is that the mills want to clinch what work they have on their books, and want to prevent cancellations later on.

Rumors are afloat that a German mill has taken an order for 7000 tons for a Canadian road, and figuring is now being done on another 10,000-ton lot. It appears, too, that some South American business may go to Europe.

It is noteworthy that the European makers seem at last to have become convinced that our strong position here is not a mere sham, but is based on an enormous consumption. The Germans have stiffened considerably of late, and are naming prices in the English market which are turning the business to the British works.

The report that a leading interest have placed 20,000 tons of Ship Plates in Belfast lacks confirmation here. Some weeks since such a transaction was reported from England.

Generally speaking, the export trade is very dull. It has practically ceased in Pig Iron, Steel Billets and Bars and other lines, although it does continue with gratifying persistency in Structural Material. In the latter the rush of work is over for the present, but it has left the shops crowded with work for many months to come.

One of the great yards on the Delaware is reported to have taken some important business lately and is now inquiring for the material.

The Eastern Bar Iron manufacturers have had another conference last week. While nothing that is definite has been yet done, the impression seems to prevail that the makers will ultimately agree upon some equitable basis.

The Sheet trade throughout the country is still under very heavy pressure, and does not appear to be gaining as yet on the accumulated orders.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	May 1, 1901.	Apr. 24, 1901.	Apr. 3, 1901.	May 3, 1900.
PIG IRON :				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$15.25	\$15.50	\$15.50	\$21.50
Foundry Pig, No. 2, Southern, Cincinnati.....	<i>14.00</i>	14.50	14.50	10.75
Foundry Pig, No. 2, Local, Chicago.....	15.50	15.50	15.50	28.50
Bessemer Pig, Pittsburgh.....	16.75	16.75	16.75	nom.
Gray Forge, Pittsburgh.....	14.50	14.75	14.50	20.00
Lake Superior Charcoal, Chicago...	18.00	18.00	18.00	25.50

BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh (nom.)....	24.00	24.00	24.00	30.00
Steel Billets, Philadelphia (nom.)...	26.25	27.00	26.00	nom.
Steel Billets, Chicago (nom.)....	26.00	26.00	25.00	nom.
Wire Rods (delivered).....	38.00	38.00	36.00	48.00
Steel Rails, Heavy, Eastern Mill....	28.00	28.00	26.00	35.50
Spikes, Tidewater.....	1.60	1.60	1.60	2.50
Splice Bars, Tidewater	1.40	1.40	1.40	2.20

OLD MATERIAL:

O. Steel Rails, Chicago, gross ton...	14.50	14.50	14.50	17.50
O. Steel Rails, Philadelphia.....	<i>16.75</i>	17.00	17.00	21.50
O. Iron Rails, Chicago, gross ton..	20.00	20.00	20.00	21.00
O. Iron Rails, Philadelphia.....	19.20	19.50	19.50	23.00
O. Car Wheels, Chicago, gross ton..	16.50	16.50	16.50	24.00
O. Car Wheels, Philadelphia.....	17.50	17.50	16.50	24.00
Heavy Steel Scrap, Chicago, gr. ton	14.00	14.00	14.00	16.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia....	1.50	1.50	1.40	1.85
Common Iron Bars, Chicago.....	1.60	1.60	1.60	2.07
Common Iron Bars, Youngstown....	1.50	1.50	1.45	1.90
Steel Bars, Tidewater	1.62 1/4	1.60	1.60	2.10
Steel Bars, Pittsburgh	1.40	1.40	1.50	1.95
Tank Plates, Tidewater.....	1.70	1.70	1.70	1.85
Tank Plates, Pittsburgh	1.50	1.50	1.50	1.75
Beams, Tidewater.....	1.75	1.75	1.75	2.40
Beams, Pittsburgh.....	1.60	1.60	1.60	2.25
Angles, Tidewater	1.75	1.75	1.75	2.40
Angles, Pittsburgh	1.60	1.60	1.60	2.25
Skelp, Grooved Iron, Pittsburgh....	1.75	1.75	1.75	1.85
Skelp, Sheared Iron, Pittsburgh....	1.85	1.75	1.75	1.80
Sheets, No. 27, Pittsburgh.....	3.20	3.25	3.25	3.15
Barb Wire, f.o.b. Pittsburgh.....	2.90	2.90	2.90	2.80
Wire Nails, f.o.b. Pittsburgh.....	2.80	2.80	2.80	2.90
Cut Nails, Mill.....	2.00	2.00	2.00	2.05

METALS:

Copper, New York.....	17.00	17.00	17.00	17.00
Spelter, St. Louis	3.82 1/4	3.77 1/4	3.75	4.45
Lead, New York	4.87 1/4	4.87 1/4	4.87 1/4	4.70
Lead, St. Louis	4.20	4.20	4.20	4.55
Tin, New York	25.87	26.00	25.50	30.00
Antimony, Hallett, New York.....	8.75	8.75	8.75	9.75
Nickel, New York	55.00	55.00	55.00	42.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.84

Chicago. (By Telegraph.)

Office of *The Iron Age*, 1905 Fisher Building, Chicago, May 1, 1901.

The market generally is less active. Considerable buying is still being done by the implement manufacturers. It is believed by this time nearly all implement establishments have closed for their season's requirements. Quite a number of the smaller ones are expected to continue to come in for some time. Outside of the Bar trade the demand appears to be less pressing.

Pig Iron.—The market is quiet by contrast with the past two months. The Malleable foundrymen are still purchasing to some extent, as the Malleable trade was undoubtedly the least covered of the Pig Iron consuming interest for the last half of the year. Considerable business is also being done in the purchase of the cheapest grades of Foundry Pig Iron which displace Scrap, and Soft and Silvery grades are moving in fair quantities. Some effort has been made by large buyers to secure some Iron at less than prevailing prices, but although inducements of prompt cash and quick shipments were offered they were unable to secure any concessions. Nevertheless, reports are current that some of the smaller Southern companies are now ready to take contracts at a concession of differentials in freight rates as against the regular Birmingham basis. Thus far no business has developed which would seem to warrant

any changes in quotations. We quote as follows, Chicago delivery:

Lake Superior Charcoal.....	\$18.00 to \$18.50
Local Coke Foundry, No. 1.....	16.00 to 16.50
Local Coke Foundry, No. 2.....	15.50 to 16.00
Local Coke Foundry, No. 3.....	15.00 to 15.50
Local Scotch, No. 1.....	16.25 to 16.50
Ohio Strong Softeners, No. 1.....	16.50 to 16.75
Southern Silvery, according to Silicon.....	16.15 to 16.60
Southern Coke, No. 1.....	15.90 to 16.15
Southern Coke, No. 2.....	15.40 to 15.90
Southern Coke, No. 3.....	14.90 to 15.40
Southern Coke, No. 1 Soft.....	15.90 to 16.40
Southern Coke, No. 2 Soft.....	15.40 to 15.90
Foundry Forge.....	14.40 to 14.65
Gray Forge and Mottled.....	13.90 to 14.15
Southern Charcoal Softeners, according to Silicon.....	15.50 to 17.00
Tennessee Silicon Pig.....	16.50 to 17.50
Alabama and Georgia Car Wheel.....	20.65 to 21.00
Malleable Bessemer.....	16.50 to 17.00
Standard Bessemer.....	18.00 to 18.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	17.00 to 18.00

Bars.—The mills are pretty thoroughly sold up to July and contracts taken for forward delivery assure good basis for operations during the last half of the year. The implement makers are still placing contracts for their season's requirements, while some of the other important consuming interests are buying quite freely at present prices for future delivery. It is expected that the production in July will be curtailed to some extent by the closing of numerous mills for repairs. Mill shipments for reasonably early delivery are quoted at 1.60c. to 1.65c., Chicago, for Common Bar Iron; 1.65c. to 1.70c. for Soft Steel Bars, and 2c., base, for Hoops. Soft Steel Bars are quoted at 1.55c., for delivery during the last half of the year. Jobbers report a continued strong pressure for shipment from warehouse and find their stocks daily running out of certain sizes. Small lots from stock are held at 1.90c. to 2c. for either Iron or Steel Bars, and 2.20c. to 2.25c., base, for Hoops.

Structural Material.—A fair demand is noted for small lots, especially for shipment to points outside of the city. No heavy transactions have transpired. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

Plates.—Orders for mill shipment are not so numerous as they have been, but trade from store is continuing to increase, which is in accordance with the usual developments at this season. Mill shipments are quoted as follows: Tank Plate, 1/4-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.55c.; Marine, 1.95c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—The mills are falling further behind on deliveries, as orders are steadily being placed, notwithstanding the efforts of manufacturers to persuade buyers to wait for a little time to give the mills an opportunity to catch up. Carload business from jobbers' stocks continues to be a feature of the situation. The demand, however, is running more strongly to Galvanized than to Black Sheets. Galvanized Sheets are quoted at 65 and 10 off generally, but some sales are being made at 70 and occasionally a little better. Small lots of No. 27 Black are still quoted at a wide range, running from 3.50c. to 3.65c., according to quantity and other conditions.

Merchant Pipe.—Manufacturers continue to report a large business, with mills making slow deliveries. Manufacturers' prices, random lengths, are as follows:

	Less than	
	In carloads.	carloads.
1/2 to 1 1/2 inch and 11 to 12 inches.....	Blk. Galvd.	Blk. Galvd.
59.2 46.2 54.9 40.9	66.7 53.3 61.9 49.9	

Boiler Tubes.—A very good trade from stock is enjoyed by jobbers. Quotations on less than carload lots from jobbers' stocks are as follows:

	Steel.	Iron.
1 to 2 1/2 inches.....	50	40
2 1/2 to 3 inches.....	57 1/2	47 1/2
6 inches and larger.....	50 and 5	47 1/2

Rails and Track Supplies.—A heavy tonnage of Rails

has been placed by railroad companies under the stimulus of the advance of \$2 per ton, to be made May 1. The demand for Light Rails has also been very good, and the local mills are sold up on such sections for fully three months. Heavy Sections can now be quoted at \$28 and 30 to 40 lb. Rails at about \$33. Splice Bars are held at 1.55c. to 1.60c.; Spikes, 1.90c. to 2c.; Track Bolts, with Hexagon Nuts, 2.70c. to 2.80c., and with Square Nuts, 2.55c. to 2.65c., with the usual advance on single carloads and on small lots from stock.

Merchant Steel.—The smaller implement manufacturers are placing season contracts quite numerously, and occasionally a good order is received for a tonnage running into the thousands. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6c. for carloads and 7c. from store; Specials, 13c. upward.

Old Material.—The market is quiet, while offerings from dealers are more liberal. The leading consumers are well supplied with stock, especially of the higher grades, for at least 60 days, and are out of the market in anticipation of the closing of works during July for repairs. While prices are weaker very little change can yet be noted in quotations. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$20.00 to \$21.00
Old Steel Rails, mixed lengths.....	14.50 to 15.50
Old Steel Rails, long lengths.....	16.50 to 17.00
Heavy Relaying Rails.....	20.00 to 22.00
Old Car Wheels.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	14.00 to 14.50
Mixed Steel.....	12.00 to 13.00

The following quotations are per net ton:

Iron Fish Plates.....	\$18.00 to \$18.25
Iron Car Axles.....	20.50 to 21.00
Steel Car Axles.....	16.00 to 16.50
No. 1 Railroad Wrought.....	16.00 to 16.50
No. 2 Railroad Wrought.....	14.00 to 14.50
Shafting.....	16.00 to 16.50
No. 1 Dealers' Forge.....	13.50 to 14.00
No. 1 Bushings and Wrought Pipe.....	12.00 to 12.50
Iron Axle Turnings.....	11.00 to 11.50
Soft Steel Axle Turnings.....	10.50 to 11.00
Machine Shop Turnings.....	9.00 to 9.50
Cast Borings.....	4.50 to 5.00
Mixed Borings, &c.	4.50 to 5.00
No. 1 Boilers, cut.....	13.00 to 13.50
No. 2 Boilers, cut.....	10.00 to 10.50
Heavy Cast Scrap.....	12.00 to 12.50
Stove Plate and Light Cast Scrap.....	9.00 to 9.50
Railroad Malleable.....	12.00 to 12.50
Agricultural Malleable.....	11.00 to 11.50

Metals.—Copper is unchanged at 17 1/2c. for carload lots of Lake, and 17 1/4c. for Casting brands. Pig Lead is also held at old quotations of 4.32 1/2c. for Desilverized and 4.42 1/2c. for Corroding in 50-ton lots.

Coke.—The demand continues surprisingly strong, with prices firmly held at \$4.85 to \$5 for Connellsville 72-hour Foundry Coke.

Byron E. White, Chicago agent of the Crucible Steel Company of America, will remove from 68 to 70 South Canal street to the Fisher Building about May 1. He will continue to devote his attention to the specialties manufactured by the La Belle Steel Company, Pittsburgh.

H. A. Forsyth, recently with Fieser, Wagoner & Bentley, has been appointed Chicago salesman for M. A. Hanna & Co. of Cleveland. The latter firm have just been appointed sales agents for the Pioneer Pig Iron, manufactured by the Republic Iron & Steel Company at their Alabama furnaces. They thus will have a line of Southern Irons in addition to their Ohio and Charcoal Irons. Mr. Forsyth has long been connected with the Western Pig Iron trade, and has a wide acquaintance, which will undoubtedly enable him to secure a good share of business.

The Shelby Steel Tube Company have opened general offices in Suite III, The Rookery Building, Chicago.

The Chicago agency of the Benjamin Atna & Illingsworth Company has been discontinued.

Philadelphia.

Office of *The Iron Age*, Forrest Building, |
PHILADELPHIA, Pa., April 30, 1901. |

The general situation is practically the same as it was a week ago, with no immediate prospects that there will be any relief from the prevailing monotony in the near future. In reporting the market, therefore, there is no room for any special comment. There is no scarcity of business, both mills and furnaces, as well as the more advanced industries, running up to their full capacity. Orders on hand are large enough to extend over a considerable period, so that the absence of new buying is not felt as it would be under other circumstances. The fact that prices appear to have reached a full limit temporarily is also inimical to buyers taking on new lines until the necessity for so doing becomes more urgent than at the present time. The chances appear to be that things will run along in their present groove until toward midsummer, by which time new bearings can be taken with a fair degree of accuracy. Manufacturers are not making any special effort to find buyers, as they regard their position as moderately secure, and any endeavor to force sales would only weaken the market without bringing in much extra business. If there is any advantage of position at all, it is probably slightly in sellers' favor, and it will require some new developments to produce new conditions.

Pig Iron.—Indications of weakness are becoming more pronounced, but especially so in Foundry grades. Leading concerns are trying to hold the market steady at about \$15.50 for No. 2 X, for deliveries at this or nearby points, but they are not getting much business, and buyers report that they are doing considerably better than the figure named. There can be no question as to the easiness of prices, although there is, as usual, considerable irregularity, particularly in the case of new Irons, or of such grades as do not specially command themselves to buyers' approval. The most prominent feature, however, is the indisposition to do anything at all in the way of buying, except when special inducements are offered or the Iron happens to be wanted for moderately early delivery. The same remarks will apply to Mill and Basic Irons, although these in large blocks are inquired for from various sources; but it is difficult to agree upon prices, as consumers have their ideas fixed that they will be able to do better later on. There is nothing in the outlook which would indicate any change from the conditions as above defined in the near future, although there is a disposition to regard the immediate outlook as likely to favor the buyers. Sales have been on a somewhat limited scale and at irregular prices, the range being about as follows for city or nearby deliveries: No. 1 X Foundry, \$16 to \$16.25; No. 2 X Foundry, \$15.25 to \$15.75; No. 2 Plain, \$14.75 to \$15; Standard Gray Forge, \$14.50 to \$14.75; Ordinary Gray Forge, \$14 to \$14.25; Basic (Chilled) \$14.35 to \$14.50, furnace, and Standard Bessemer, \$15 to \$15.25 at furnace.

Billets.—Very little business has been done during the past two or three weeks, and although buyers could place orders at about \$26.50, there seems to be no disposition to do so at the present time. The offerings are neither large nor pressing, however, consequently the market may be called dull, at possibly from \$26.25 to \$26.50, with the usual advance on special quality Steels.

Plates.—The market has been comparatively quiet for the past two or three weeks, but there is again a new influx of orders, which come chiefly from the ship and bridge building concerns, as well as for boiler purposes and miscellaneous work generally. The New York Ship Building Company are understood to have taken in some important business recently, and prices have been quoted to them for a very considerable tonnage. A new list of extras have been adopted by all the Plate manufacturers in the United States, as follows:

Widths over 100 up to 110 inches, extra will be 0.05c. per lb.
Widths over 110 up to 115 inches, extra will be 0.10c. per lb.
Widths over 115 up to 120 inches, extra will be 0.15c. per lb.
Widths over 120 up to 125 inches, extra will be 0.25c. per lb.
Widths over 125 up to 130 inches, extra will be 0.50c. per lb.
Widths over 130 inches, extra will be 1c. per lb.

All circles and sketches will be 0.10c. per lb. extra. This includes all Plates not strictly rectangular, except straight taper Plates not under 30 inches wide at the small end and where difference in width is not over 4 inches. For these there will be no extra charge. Weights of all Plates rolled shall, in case of dispute, be governed by the standard adopted in 1895 and 1896 and amended 1901 by the Association of American Steel Manufacturers. Deliveries will not include any drayage charge, except this be added by special arrangement at extra cost. Terms will be cash, 30 days, with no discount for spot cash, except at rate of 6 per cent. per annum. In case time beyond 30 days is allowed, interest is to be added for such overtime at same rate. Plates thinner than $\frac{1}{4}$ inch on edges, but not under 3-16 inch, will be 0.05c. per lb. extra. Plates thinner than 3-16 inch but not under No. 8 B. W. G. will be 0.10c. per lb. extra. Hereafter Plates ordered to weight per square foot for $\frac{1}{4}$ inch thickness will be charged 0.05c. extra and for 3-16 inch thickness 0.10c. extra, since such rolling will require them to be under $\frac{1}{4}$ inch and 3-16 inch, respectively, on edges. Shell grade is henceforth abandoned. There will be an extra charge of at least 0.05c. per lb. for orders of less than a carload, each of which require to be shipped separately. Where extra wide Plates require to be up edged and blocked, an extra charge of \$5 for each car so blocked will be made. Where long Plates, which will reach over two cars, are ordered, an extra charge of \$10 will be made for blocking and preparing each two-car shipment. Where extra long Plates, which will reach over three cars, are ordered, an extra charge of \$25 will be made for blocking and preparing each three-car shipment. Prices are as last quoted, viz: Plates, $\frac{1}{4}$ inch and thicker, 1.80c. to 1.85c.; Universals, 1.80c. to 1.85c.; Flange, 1.90c. to 2.10c.

Structural Material.—There is a very good demand, and, following the Plate trade, some very nice orders have been distributed during the past few days. Prices steady as last quoted for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—The Eastern Bar Iron Association held their meeting last Friday at the Waldorf-Astoria, in New York City, but, as a matter of fact, nothing of an immediately tangible character was developed. They have two or three alternative propositions before them, all of which are recognized to have some good points, but the matter is not far enough advanced to lead to the immediate adoption of any of the propositions. The trade are of the opinion, however, that they will soon arrive at a point which will meet unanimous approval and are therefore entirely satisfied with the progress thus far made. The demand for Bars is good, and it must be a very attractive order that would be accepted at less than 1.50c. at mill, 1.50c. to 1.55c. being the usual quotation for Iron Bars and 1.62 $\frac{1}{2}$ c. to 1.70c., delivered, for Steel Bars.

Sheets.—There is absolutely nothing new to say under this heading, as the mills have plenty of work and have no difficulty in securing full quotations for anything which they can offer for delivery within the next 60 or 90 days. Prices are irregular, but, as a rule, may be quoted as follows for Best Sheets (common Sheets two-tenths less): No. 10, 2.50c.; No. 14, 2.70c.; No. 16, 2.90c.; Nos. 18-20, 3.40c.; Nos. 21-24, 3.50c.; Nos. 26, 27, 3.65c.; No. 28, 3.75c. to 3.80c.

Old Material.—The market for Old Material is very disappointing. It is dull and prices are a little lower, but holders give way very reluctantly, and if buyers are under any immediate necessity for making purchases they have to pay moderately full prices. On the other hand, the market will not stand forcing, and any pressure to realize soon leads to a weakening in quotations. Bids and offers are about as follows for deliveries in buyers' yards: Choice Railroad Scrap, \$19 to \$20; Country Scrap, \$16 to \$17; No. 2 Light Scrap, \$12 to \$13; Machinery Cast, \$14 to \$14.50; Heavy Steel Scrap, \$16.75 to \$17; Old Iron Rails, \$19.50 to \$20; Old Steel Rails, \$16.75 to \$17; Wrought Turnings, \$12 to \$12.50;

Cast Borings, \$8.75 to \$9; Old Car Wheels, \$17.50 to \$18; Iron Axles, \$22 to \$23; Steel Axles, \$17 to \$18.

Howe, Johnson & Co., Iron commission merchants, Drexel Building, Philadelphia, who have for many years handled "Mulirkirk" (Roasted Carbonate Ore) Charcoal Pig Iron in the East, now announce that they have been appointed exclusive agents for the whole territory east of Altoona, Pa., including New York and the New England States.

Pilling & Crane are sending out notices that on or about July 1 next the Warwick Iron & Steel Company expect to commence the manufacture of Basic Pig Iron. The reputation of the Foundry and Forge Iron of the Warwick Company is unsurpassed, and under the management of Mr. Cook it is certain that their Basic grade will have no superior. The Warwick Iron runs about 0.5 in phosphorus, is low in sulphur, and the silicon will be well within the limit. The Iron will be machine cast and will form a valuable addition to the source of supply of our Eastern Steel works. Pilling & Crane have been appointed exclusive sales agents for Warwick Basic and will be pleased to quote prices on Basic Pig, but to prevent any possible misunderstanding state that the selling arrangements of the Warwick Company will remain unchanged so far as their Foundry and Forge Irons are concerned, the appointment of this firm as exclusive selling agents relating only to their Basic grade.

Cleveland.

CLEVELAND, OHIO. April 30, 1901.

Iron Ore.—The sales of material during the week have been large, but hardly up to the expectations of the shippers. The first rush to cover needs did not last very long and now the business has settled down to a more steady pace. The current belief is that the amount of Ore left on the lower lake docks has something to do with this backwardness and also a little uncertainty as to the amount of business to be done in Pig Iron during the second half of the year. So far this appears to be a problem. The Steel indications are for some heavy business, but the Pig Iron makers are a little slow about making contracts. The strike of the marine engineers still hangs on and is delaying business. The belief is now growing that the delay is in part due to the attitude of the vessel owners, who are encouraging the men to hold out, believing that it will better the rates to be received during the shortened season. The first contracts for the season for Ore carrying have been made by the United States Steel Corporation. The United States Steamship Company, an affiliated organization, have a carrying capacity during a reasonably long season of 9,000,000 tons of any bulk commodity. The Ore controlled by the big steel company is vastly in excess of the capabilities of the vessels. They have therefore placed this last week about 2,000,000 tons of Ore with outside vessels at 80c. from Duluth, 70c. from Marquette and 60c. from Escanaba. The rates have been generally accepted by the vessel owners, and as fast as the shippers are ready to make contracts the Ore is being placed.

Pig Iron.—The Pig Iron market is a little stronger than it has been, but without any marked sensational features. The buying for the last week has been steady and in moderately small orders. Some of the buyers are disposed to make big contracts for some time ahead, but furnacemen are a little cautious, which spirit is also manifest among the buyers to a very great extent. For the present there is not much Bessemer or Basic Irons to be sold. The supply of Foundry and Scotch Irons is a little more plentiful than that of the other grades mentioned. But very little talk is being indulged in now as to business for the second half of the year. There has been a belief current that when business started for that period it would be done at a little lower price than prevails at the present time. The prices being quoted now are: Bessemer, \$16.50; Basic, \$16; Foundry No. 1, \$15.50; Foundry No. 2, \$15, Valley furnace. The Scotch Irons are bringing the same as the Foundry grades.

Finished Material.—The entire interest in the market this week has been around the Steel Rail trade.

Some enormous sales have been made, the consumers rushing to get under cover before the advance to \$28, which went into effect yesterday. The aggregate sales of the week have been nearly 55,000 tons. Most of these have been to the electric lines, which are now building a network of roads all through this section of Ohio. Some of the rails, however, are for the steam roads. The Ann Arbor came in for 1000 tons, and the Wheeling, Alliance & Lake Erie, which is soon to build its extension to the lake and make other connection with its coal property, is a prospective buyer of about 3500 tons. The inquiry for this material is now on the market, but so far as learned the order has not been placed. Specifications on former orders are very heavy. The Billet trade is a little easier than it has been heretofore, the supply being greater. A general reduction of prices is expected, these having been abnormal of late, but the new figures have not been named. The orders on Structural Material have been moderately heavy only. Most of the big contracts have been made, and those who are now buying are the smaller consumers, who do not make long time contracts. These small orders have aggregated a satisfactory tonnage. The buyers have made heavy specifications on former orders of Plates during the week and with the small orders that are coming in have made a good, steady business. The general tone of the market is healthy, no boom tendencies being noted, but rather an air of quiet stability that is promising for the future.

Old Iron.—The Scrap trade has been in keeping with the other branches, being lively and healthy, but displaying no sensational tendencies. The belief current is that the market will remain on the present basis for some time to come. The prices are as follows: No. 1 Wrought, \$16.50 net; Iron Rails, \$20 gross; Steel Rails, \$16.50 gross; Car Wheels, \$19 gross; Cast Borings, \$6 net; Wrought Turnings, \$10 net; Machinery Cast, \$13 net.

Cincinnati. (By Telegraph.)

Office of *The Iron Age*, Fifth and Main streets, CINCINNATI, May 1, 1901.

In spite of the statistical position, the activity of consumers and the general opinion of the trade to the contrary, the Pig Iron market is quotably lower than it was a week ago. It was vaguely hinted at a week ago that offerings were being made on the basis of 25c. lower than minimum quotations, but not much credence was placed in the reports. It is now definitely ascertained that a lot of 5000 tons of Southern Iron was sold in an Ohio River city, a few days ago, at a cut of 50c. on the minimum figures as given in last week's *Iron Age*. This has for the time being at least upset all preconceived ideas of the situation, and given the prophets a bad case of "that tired feeling." While it is generally acknowledged that the market must now be reckoned on the basis of \$11.25, Birmingham, for No. 2, yet there are a number of sellers who have so far refused to trade at less than \$11.75, and are expressing the belief that values in general will not recede to amount to anything. The market, however, is far from firm, and a feeling of uncertainty prevails. The amount of Iron sold last week was small, and a very quiet time is promised for the week to come. Freight rate from Birmingham is \$2.75 to this point; from Hanging Rock district, \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.	\$14.50 to \$15.25
Southern Coke, No. 2.	14.00 to 14.75
Southern Coke, No. 3.	13.50 to 14.25
Southern Coke, No. 4.	12.75 to 13.50
Southern Coke, No. 1 Soft.	14.50 to 15.25
Southern Coke, No. 2 Soft.	14.00 to 14.75
Southern Coke, Gray Forge.	12.75 to 13.50
Southern Coke, Mottled.	12.75 to 13.50
Ohio Silvery, No. 1.	16.00 to 16.50
Ohio Silvery, No. 2.	15.00 to 15.50
Lake Superior Coke, No. 1.	15.75 to 16.00
Lake Superior Coke, No. 2.	15.50 to ...
Lake Superior Coke, No. 3.	13.75 to 14.00
Southern Basic.	14.00 to 14.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.	\$18.25 to \$18.75
Standard Southern Car Wheel, No. 2.	17.25 to 17.75
Lake Superior Car Wheel and Malleable	18.50 to 19.00

Plates and Bars.—While the market has been quiet there is no indication of any weakening in prices. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.60c., with half extras; same in small lots, 1.80c., with full extras; Steel Bars, in carload lots, 1.15c., with half extras; Base Angles, in carload lots, 1.80c.; Plates, $\frac{1}{4}$ -inch and heavier, 1.80c.; Sheets, No. 16, 2.50c.

Old Material.—The market has been active and values are higher. We quote dealers' buying prices per gross ton, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$18; Cast Railroad and Machine Scrap, \$12.50 to \$13; Iron Axles, \$19; Iron Rails, \$17 to \$17.50; Steel Rails, rolling mill lengths, \$15 to \$15.50; short lengths, \$14; Car Wheels, \$16 to \$16.50.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, May 1, 1901.

(By Telegraph.)

Pig Iron.—The leading Steel interest are buying lots of Basic Iron and reported to be heavily short of this material. Prices of Basic Iron are higher, and up to \$16, delivered, Pittsburgh, has been paid for prompt Iron. Any lots of Bessemer Iron being offered on the market for May and June shipment are eagerly snapped up by leading consumers, and while the output of Bessemer Pig is the heaviest ever known, yet it seems to be going into actual consumption as fast as made. The price of May and June Bessemer Iron is \$16 at furnace. A good deal of Forge Iron is being sold, one leading consuming interest bought heavily in the past couple of weeks, covering their requirements for considerable time ahead. Foundry Iron is firm, and some producers are asking higher prices. We quote Bessemer Iron \$16 at furnace or \$16.75, Pittsburgh, for May and June shipments. Nothing has been done as yet for last half of the year, but it is reported that the leading Steel interest may buy some Iron for second half within a short time. Forge Iron is held at \$14 at furnace, or \$14.50 to \$14.75, Pittsburgh. Northern No. 2 Foundry Iron is \$15 to \$15.75, Pittsburgh, with some dealers quoting higher.

Billets.—Sales of prompt Bessemer Billets, 4 x 4, have been made at full price of \$24, Pittsburgh or Youngstown, for May and June delivery. Small lots of Steel for spot shipment are selling at higher prices. There is still somewhat of a scarcity of Sheet and Tin Bars, and some of the Sheet mills are not getting Bars as fast as needed.

(By Mail.)

The situation in the Iron trade is quiet, but strong. New business has fallen off a good deal, but there is no pressure on the part of the mills to sell. It is pretty generally accepted that prices will not be higher and the trade are buying more cautiously. Bessemer Iron is selling in small lots for May and June at \$16, at furnace, while Billets are bringing the full price of \$24. There is no change in prices on Finished Material.

Ferromanganese.—We continue to quote 80 per cent. domestic Ferro at \$58.50, delivered at buyer's mill. We may state that this price is sometimes shaded by the German makers.

Structural Material.—A large amount of new tonnage is being placed. The Fort Pitt Bridge Company have taken good sized contracts, among these being six Steel buildings for the National Glass Company, at Cambridge, Ohio. The American Bridge Company have also taken some large contracts, among these being 70 railroad bridges from 30 to 100 feet long for Cuba. Also a railroad bridge 1276 feet long for Toronto, Can., and a large number of Steel buildings for Venezuela. There is no change in prices. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inch, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.40c. to 1.50c., full extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Plates.—We note a heavy demand for Plates, and the railroads are placing good orders for Fire Box Steel of

the higher grades. The Pressed Steel Car Company are taking in over 1200 tons of Plates and Shapes per day from Carnegie Steel Company. There is no change in prices and we quote: Tank quality, $\frac{1}{4}$ -inch and heavier, 1.50c.; 3-16 inch, 1.55c.; under 3-16 inch and above No. 10, 1.60c.; Flange or Boiler Steel, 0.1c. advance over the base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Muck Bar.—We quote standard grades at \$27, delivered f.o.b. Pittsburgh.

Bars.—As noted last week, the Steel Bar makers have formed a Bar Association and have fixed the minimum price of Bessemer Steel Bars at 1.40c., Pittsburgh, with half extras. Basic Open Hearth Bars carry \$2 per ton extra, while there are also extras on the higher carbons. All Bars are to be sold at delivered prices, as fixed by the National Tube Company rate book. We may note, however, that most of the mills are quoting 1.50c. on Steel Bars in carload lots and up to 1.60c. for small lots. It should be understood that the 1.40c. price is absolutely minimum and only on large lots. We quote Common Iron Bars at 1.50c., Valley mill.

Sheets.—Some of the Sheet mills are selling Sheets for three or four months head, the price to be the ruling price at the time of delivery. If the market goes up in the meantime the mill has the advantage, while if it goes down the buyer has the better of it. The extraordinary demand for Sheets shows no abatement, but is about as heavy as ever. The leading Sheet interest have started up the Falcon Works, at Niles, and are running now practically every plant they own, with the exception of Hyde Park and one or two small plants. We quote: No. 27 Black Sheets, box annealed, 3.20c. to 3.25c.; No. 28, 3.30c. to 3.35c. We quote Galvanized Sheets at 70 and 5 per cent. off in carload lots, maker's mill, and note that some sellers are holding firm at 70 off.

Skelp.—We note a continued active demand for Skelp, much larger than the supply, making deliveries very hard to obtain. We quote Grooved and Sheared Steel Skelp, ordinary sizes, at \$1.75, and note that very wide or very narrow sizes bring from \$1 to \$2 a ton more. Sheared Iron and Steel Skelp are held at \$1.85 to \$2, depending on sizes and deliveries wanted by customer.

Tubular Goods.—A good deal of tonnage is being placed and the market is very firm. A gas interest are reported to be in the market for 35 to 40 miles of Line Pipe. Good orders for Tubular Goods continue to be entered by the mills for foreign shipment. Prices to the small trade are as follows:

Merchant Pipe.		Per cent.	Per cent.
		Black.	Galvd.
$\frac{1}{2}$ to $\frac{1}{2}$ inch and 11 to 12 inch	.....	61	48
$\frac{3}{4}$ to 10 inch	.....	68 $\frac{1}{2}$	56
<i>Casing, Random Lengths.</i>			
2 to 3 inch	.....	58	53 $\frac{1}{2}$
3 $\frac{1}{2}$ to 4 inch	.....	63	59
4 $\frac{1}{2}$ to 12 $\frac{1}{2}$ inch	.....	65	61 $\frac{1}{2}$
<i>Casing, Cut Lengths.</i>			
2 to 3 inch	.....	53 $\frac{1}{2}$	59
3 $\frac{1}{2}$ to 4 inch	.....	59	55
4 $\frac{1}{2}$ to 12 $\frac{1}{2}$ inch	.....	61 $\frac{1}{2}$	67 $\frac{1}{2}$
<i>Boiler Tubes.</i>			
Steel.		Up to 22 feet.	
1 inch to 1 $\frac{1}{4}$ inch and 2 $\frac{1}{4}$ inch to 5 inch, inclusive	.....	65 $\frac{1}{2}$	Per cent.
2 inch to 2 $\frac{1}{2}$ inch, inclusive	.....	60	
6 inch and larger	.....	59	
<i>Iron.</i>			
1 inch to 1 $\frac{1}{4}$ inch and 2 $\frac{1}{4}$ inch	.....	43 $\frac{1}{2}$	
1 $\frac{1}{4}$ to 2 $\frac{1}{4}$ inch	.....	43	
2 $\frac{1}{4}$ to 13 inch	.....	53	

Prices made by the mills to the jobbers are from 5 to 7 $\frac{1}{2}$ per cent. less than the above.

Connellsville Coke.—For the first time in the history of the Connellsville region the output of Coke in that district in one week has exceeded 235,000 tons. This is at the rate of 1,050,000 tons a month, or at the rate of about 40,000 tons for each working day. Out of 21,447 ovens in the region 19,942 were active last week and 1502 idle, the output having been 236,181 tons and shipments 11,170 cars. The Coke business was never in a more prosperous condition than it is now. It is true that there

have been short periods when prices of Furnace and Foundry Coke were higher than they are now, but these high prices only lasted a short time. At present prices which the Coke makers are getting for their product there is a very nice profit, and the heavy demand takes the output of the ovens as fast as it is made. The Klondike field in the Connellsville region is being developed rapidly, and, as noted last week, the Columbia Coke Company, a new concern, will at once build 100 Coke ovens in that district. Some important improvements will likely be made to different Coke plants of the United States Steel Corporation as a result of a trip of Thomas Lynch, president, and other officials among these works last week. We quote strictly Connellsville Furnace Coke at \$2 and 72-hour at \$2.50 a ton. Main Line Furnace Coke is being offered at \$1.65 to \$1.85 a ton, and Foundry from \$2 to \$2.25 net ton, at oven.

The Labell Iron Works announce that the business offices of the company were removed to Steubenville, Ohio, on April 27, where all communications should be sent. The operations of the Wheeling mills will continue as heretofore.

St. Louis.

Office of *The Iron Age*, 1205 Chemical Building, St. Louis, May 1, 1901.

Pig Iron.—The demand is only moderately active, but stocks are being depleted so rapidly that sellers are looking for a renewed inquiry on the part of consumers. Shipments are coming forward more promptly, and less complaint on the part of consumers is the natural result. Sales during the week were limited to moderate quantities, and at the prices as quoted below. We quote, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry.....	\$15.50 to \$15.75
Southern, No. 2 Foundry.....	15.00 to 15.25
Southern, No. 3 Foundry.....	14.50 to 14.75
Southern, No. 4 Foundry.....	14.00 to 14.25
No. 1 Soft.....	15.50 to 15.75
No. 2 Soft.....	15.00 to 15.25
Gray Forge.....	13.75 to 14.00

Bar Iron.—There is a steady demand for Bars, particularly from car builders and agricultural implement manufacturers. The manufacturers of agricultural implements are anticipating an unusually heavy trade during the coming season, and are now busy preparing for it. Jobbers continue to complain regarding their inability to secure shipments more promptly. Notwithstanding the fact that idle mills have been started up there continues to be complaint in this direction. Mills quote Iron and Steel Bars at 1.65c. to 1.75c., half extras, East St. Louis. Jobbers quote Iron Bars 1.90c. to 2c.; Steel Bars, 2c. to 2.10c., full extras.

Rails and Track Supplies.—A larger business in heavy sections could be transacted if deliveries could be made within a reasonable period. Light Rails are in good demand and a good inquiry is also reported for Bolts, Nuts, &c. We quote: Splice Bars, 1.70c. to 1.80c.; Bolts with Square Nuts, 2.50c. to 2.60c.; with Hexagon Nuts, 2.65c. to 2.75c.; Spikes, 1.90c. to 2c.

Pig Lead.—Business is quiet. Inquiries are fairly numerous, but prospective buyers are not inclined to pay asking prices, which are 4.20c. for Soft Missouri, and 4.22½c. for choice brands. Desilverized is quoted at 4.30c. to 4.32½c.

Spelter.—There is a good demand for Spelter and prices are higher. The galvanizers are heavy buyers, and are likely to continue to be for some time. Sales are reported at from 3.82½c. to 3.87½c., the latter being the asking price at this writing.

New York.

Office of *The Iron Age*, 232-238 William street, New York, May 1, 1901.

Pig Iron.—No large sales are reported in this district during the week under review, and buyers seem rather indifferent. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16.50 to \$17.50; No. 2 X, \$15.50 to \$16; No. 2 Plain, \$14.25 to \$14.50; Gray Forge, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$16 to

\$16.25; No. 2 Foundry, \$15 to \$15.50; No. 1 Soft, \$16 to \$16.25; No. 2 Soft, \$15 to \$15.50; No. 3 Foundry, \$14.50 to \$14.75; No. 4 Foundry, \$14.25 to \$14.50; Gray Forge, \$14.25 to \$14.50.

Cast Iron Pipe.—No large sales are reported. We continue to quote \$23 to \$23.50 per gross ton, at tide-water.

Steel Rails.—A good deal of additional tonnage has been booked, and in the case of a number of the mills the limit has been reached. We quote \$28 for Standard Sections and \$32 to \$32.50 for Girder Rails. We quote Spikes, 1.60c. to 1.65c.; Splice Bars, 1.40c. to 1.45c.; Square Track Bolts, 2.10c. to 2.15c., and Hexagon Bolts, 2.20c. to 2.25c., at mill.

Finished Iron and Steel.—Among the orders for Structural Steel recently taken is one round lot for a rolling mill in this vicinity, and also for several lots for export. The demand for small lots of material from local sources continues quite heavy. The order for the large grain elevator has not yet been placed. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.65c. to 1.70c. for Tank, 1.75c. to 1.80c. for Flange, 1.88c. to 1.90c. for Fire Fox. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.50c. to 1.60c.; Common Bars, 1.45c. to 1.50c.; Soft Steel Bars, 1.60c. to 1.62½c., and Hoops, 1.90c. to 2c., base, on dock.

The executive offices of the Tennessee Coal, Iron & Railroad Company have been removed to the sixteenth floor of 100 Broadway.

W. R. Thomas, Pig Iron merchant, has removed to 95 Liberty street.

Thomas Towne, Eastern sales agent of the Union Drawn Steel Company, manufacturers of Cold Finished Steel, has removed his office and warehouse to 390 and 392 Washington street, corner of Hubert street.

A. R. Whitney, Jr., & Co., engineers and builders, agents of the McClintic-Marshall Construction Company of Pottstown and Pittsburgh, Pa., have removed their offices from 78 Fifth avenue to 135 Broadway.

Metal Market.

Office of *The Iron Age*, 232-238 William street, New York, May 1, 1901.

Pig Tin.—During the week under review the market has not been active and prices have not varied much. At the close to-day spot was quoted 25.75c. bid and 26c. asked. May was quoted 25.65c. bid and 25.90c. asked. The London market closed £118 for spot and £114 10s. for futures. Arrivals at the Atlantic ports were large and the deliveries the largest for the year. For the four months of 1901 the deliveries are now only 300 tons below those for the corresponding period of 1900. Shipments from the Straits show an increase of 740 tons for the month over last year, bringing the total increase for this year up to about 1700 tons. Total deliveries everywhere were heavy, reducing the visible supply 1934 tons, or 63 tons below that of the corresponding period of last year. For the first time on record the visible supply of the United States is 1630 tons larger than that of London. The total visible supply on April 30 is 63 tons below that of April 30 of last year.

Copper.—The market has not changed here and prices have been kept the same as for several months past. Lake Superior Ingots are quoted 17c. and Electrolytic 16½c. There is talk of a little shading in a certain quarter, but this, it is said, was done under special circumstances. It appears that the concerns who are well known in the trade as exporters have reversed operations and are now importers. They claim that this is only natural, as it pays well as long as the producers hold to the present high prices. London prices have declined during the week about £1. The closing prices to-day were £69 8s. 9d. for spot and £69 18s. 9d. for futures. Best Selected has declined 15 shillings and is quoted £75 10s. Imports for the month of April amounted to about 3300 tons. The

exports for the month aggregated but 4920 tons, according to the Metal Exchange returns. The total exports for the four months of this year amount to 28,987 tons, or 28,167 tons less than the figures for the same period of last year, and even 8068 tons less than for the same period of two years ago, when the exports were unusually small. The exports for the month of April are the smallest on record since 1892. It is strange to say that, with such remarkably small shipments, the stocks in Europe for the fortnight increased 900 tons, a further proof of the reduced consumption in London.

Pig Lead.—There is nothing new in this market, the demand being normal with unchanged prices. The American Smelting & Refining Company are quoting 4.37½c. for Desilverized, f.o.b. New York, and 4.32½c., St. Louis. The London market is unchanged, the closing price to-day being £12 5s.

Spelter.—Has been about 5 to 10 points firmer since our last writing, but is easier to-day at 4c. to 4.05c., which is the same figure as we quoted last week. London is dull and a little lower with £17.

Antimony.—Is unchanged. Hallett's is quoted 8¾c. to 9c., Hungarian 8½c. to 8¾c. and Cookson's 10¼c.

Nickel.—Lots not covered by yearly contract are not obtainable under 60c. The scarcity of the metal is constantly becoming more pronounced, according to the producers.

Quicksilver.—Is unchanged. Prices quoted here are \$51 per flask of 76½ lbs. for lots of 50 flasks or more. The London market is unchanged at £9 2s. 6d.

Tin Plate.—There is no change in the situation. Demand is characterized as steady, and the American Tin Plate Company still quote on a basis of \$4.19 per box of standard 100-lb. Cokes f.o.b. New York, and \$4 per box f.o.b. mills. Deliveries at these prices can be had until October 1.

Bistish Tin Plate Employers and Their Workmen.

The *Iron and Coal Trades Review*, London, with the above title from the pen of Charles Lancaster of the firm of Hughes & Lancaster, Liverpool, discusses the Welsh tin plate trade.

An American journal (*Tin and Terne*), devoted to the tin plate trade of the United States, has been lately adumbrating upon the present condition of the Welsh tin plate industry, chiefly in regard to the wages paid and the limited output. Briefly the statements made may be summarized as follows:

1. Welsh works employ too many men to do the work, and are paying too high prices for steel and fuel.

2. The relations between the employer and the employee are such that the workmen see no advantage in greater output and the exercise of greater skill. With entire lack of education in such matters, it is no wonder the worker sees no advantage in pushing capacity, improving machinery and reducing costs.

3. The workman's apathy is no greater than that of his employer, who sees no course before him but that of getting the workmen to do more work without offering the proper incentive in the way of better facilities.

4. The large output of American tin plate mills cannot be attained by Welsh workmen with their present equipment.

The writer then comes to the conclusion that it is not imperative that Welsh wages should be reduced in order to meet the American competition, as the Welsh cost, in wages per box, is such that a considerable cut would not make any difference. These observations are interesting, having regard to the quarter whence they proceed; but, with all respect to our contemporary, they are not free from prejudice, nor quite in accord with former statements, although we will not labor that. What is more to the point, is to ask if a tonnage rate—such as we understand the employers are willing to offer—would not be a better basis than payment by area, the fruitful source of so many disputes in the past? Also a scale which will give the workers as much in the way of

weekly wages as at present, and even more, by increasing the output? As regards the amount of wages earned under the 1874 list—that bone of so much contention—we have never been able to see the relative fitness of the wages of workers in machine shops who labor 53 hours per week for an average of 33 shillings, and the crew of a tin plate mill, all of whom work 48 hours per week, and some of whom receive double the weekly wage of a trained machinist. It will be interesting to give some figures relating to the earnings of tin plate workers under the list of 1874, with a minimum average output per mill of 40 boxes per shift of eight hours. These are as follows:

1st shift 240 boxes (40 B X 6) 8 a.m. to 2 p.m.
2d shift 200 boxes (40 B X 5) 2 p.m. to 10 p.m.
3d shift 200 boxes (40 B X 5) 10 p.m. to 6 a.m.

Rate per box:

Rollers	3	8	4
Doublers	2	15	0
Furnacemen	2	11	8

Rollers	3	8	4
Doublers	2	15	0
Furnacemen	2	11	8

This means per week:

	£	s.	d.
1st shift of 48 hours—Rollers	3	8	4
1st shift of 48 hours—Doublers	2	15	0
1st shift of 48 hours—Furnacemen	2	11	8
2d and 3d shift of 40 hours—Rollers	2	11	6
2d and 3d shift of 40 hours—Doublers	2	5	10
2d and 3d shift of 40 hours—Furnacemen	2	3	0

a. d.

Average of rollers per hour	1	5	
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Average of doublers per hour	1	1½	
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Average of furnacemen per hour	1	0½	
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This is in marked contrast to the wages of skilled artisans in any shipbuilding or engineering works, where 10 pence per hour is a fairly high wage. It is true that mills are occasionally idle through breakages, and that workmen lose time in consequence of illness or other causes. But these losses could easily be picked up, and as a matter of fact are picked up, to an extent which clearly points to the ability of the mill crews to turn out an average of, not 40 boxes, but 50. But it would not be possible to accomplish this by having so many spare hands "working round," as it is styled in the works' language, thereby losing a shift or so per week. This can be said with special regard to tin house men, whose earnings average about 55 shillings per week in full employ.

We do not think the reason why Welsh tin plate workers who go to America and do nearly twice as much work as they did in Wales is entirely or even largely owing to the superior American machinery. Welsh makers could easily prove this by disclosing their own records of outputs when it has suited the men to make them. But very different are the facts in relation to American fuel and American ore, pig iron and scrap. As to fuel, Pittsburgh, with a carriage of 50 to 80 miles, has coal delivered at 3 shillings 9 pence, as worked from the colliery, while Welsh small coal costs 6 shillings 6 pence, with a carriage of 10 miles.

A good many of the big American tin plate plants were given advantages by municipalities, such as inducements to settle in certain places, going so far, in some instances, as free "sites" of land, and freedom from rates for a term of years. No such easements are, or ever have been, obtainable for tin plate plants in this country, where anything from £15 to £60 per acre has to be paid as rental. To begin with, a rent charge for land upon tin plate works averages £40 per mill per annum. This, on a 10-mill plant, is £400. Then come rates and taxes, which in South Wales are as high as 8 shillings in the pound. Welsh mills are frequently rated at £125 per mill. This, on 10 mills, is an assessment of £1250 or £500 per annum. Therefore a Welsh tin plate work of 10 mills pays as rent £400, and as rates and taxes £500—together £900 every year—making large and onerous charges which are not levied upon American tin plate works, where free sites and freedom from taxes for a term of years were offered as inducements to start the industry. The keenness to start new industries in American towns which are in process of development is indeed extraordinary. Not long since a shipbuilding concern at Seattle, on Puget Sound, tendered to the United States Government for the construction of a bat-

the ship. It became known that the Seattle firm had named a figure which was some \$100,000 out. Instantly a public subscription was started to make up this difference and to secure the coveted order for Seattle. This was accomplished, the money being immediately raised.

In this country heavy railway charges have a great deal to answer for. It is rare to find any British manufacturer helped by a cheap rate. An instance occurs to us where a railway company charged, and we believe still charges, 9 pence per ton for conveying 7-ton truck loads of undamageable goods a distance of 250 yards!

But apart from these and many other advantages, the fact is that the Americans have begun to make tin plates at a point where the Welsh tin plate makers appear to have left off. All labor-saving appliances are thoroughly exploited in America, and everybody concerned works in the most strenuous manner. When the Welsh Trades Union organ lived and flourished, it told the tin plate workers periodically that anything over 36 boxes per shift was out of the question, and this amazing utterance seems to have been readily accepted by the men, who have thus been trained in the habits of what may be called desultory working, which will do further enormous harm to the Welsh tin plate industry if it is not all changed. This is not the occasion to discuss American methods. What we have to consider is that the method which is being practiced in America in every conceivable article of manufacture is on the whole successful. If Welsh makers think they can bottle themselves up and be content with merely railing at such a state of affairs, then good-by to their remaining trade. There is not a single point about the Welsh tin plate trade that can be said to really compare favorably with the American. American steel is said to be better and cheaper. Boycotting the shearings from American tin plate bars in Wales will not alter the ductility of the American steel which makes the tin plate. There is said to be more tin on the American tin plate, and as for the American boxes, they are generally admitted to be as far superior to the boxes turned out in Wales as a tin canister is to a wooden matchbox.

Any one here who makes an attempt to contrast the conditions in tin plate making which exist in America with those in South Wales is like to be disappointed. The Welsh employers have lately been beseeching the men to follow the machinery, and distribute the fixed charges over a larger number of units per output and so reduce the cost of every box. This the men appear stubbornly to refuse to agree to. In this refusal they are cutting their own throats, and the throats of their employers as well.

America quickly saw the advantage of rolls of large diameter. What principally appeals to them is that the larger heat radiating surface permits of a greater product being made, and that the larger body of metal heats and cools more slowly, which contributes to give a steadier temperature. Moreover, the greater roll circumference affords a larger area to be worn out in use, so that a large roll, other things being equal, can be used to roll a larger quantity of material before the surface has so deteriorated as to require returning. No doubt a good many elements enter into the question of whether there is a limit to the diameter of tin plate rolls or not, but it is quite on the cards that before this matter is absolutely settled there may be a new and startling development in the automatic production of tin plates which may render it unnecessary to discuss the question much further.

The friends of the Welsh tin plate makers are getting discouraged at the attitude adopted in Wales by the parties interested. Far too much importance is attached to the statements frequently made that the views advanced are not to be relied upon, and that probably the only object is to depress the market. There is a rude awakening in store for South Wales respecting the whole of the remaining trade in tin plates if things are not radically altered. There is not the least doubt that if the men were to follow the machinery and earn a larger weekly wage than they are doing at present Wales could "put up" an excellent fight, but if this is not forthwith taken in hand, nothing short of complete

and overwhelming disaster seems to ultimately await the tin plate industry of South Wales.

The Shipbuilding Consolidation.

Plans are practically complete for the consolidation of five of the large shipbuilding companies of this country under one management. A syndicate of bankers, headed by H. W. Poor & Co. of 18 Wall street, New York, are now engaged in underwriting the capital stock of the new company. A meeting was held in New York on Tuesday at which the basis of consolidation was decided upon and final details prior to the underwriting were arranged. According to present plans the new company are to include:

The Newport News Shipbuilding & Dry Dock Company.
The Union Iron Works of San Francisco, Cal.
The New London Shipbuilding Company of New London, Conn.
The Crescent Shipyards of Elizabethport, N. J.
The Bath Iron Works and the Bath Windlass Company of Bath, Maine.

It is stated that the company are to be capitalized at \$70,000,000, of which one-half is to be preferred stock. In order that outside influence may not obtain control, it is stated that no bonds are to be issued. At the offices of H. W. Poor & Co. it is stated that formal announcement of the plans will be made next Monday or possibly before the close of this week. According to the present report, H. E. Huntington, a nephew of the late Collis P. Huntington, is to be the president of the company.

It is also said that the company intend building the largest dry dock in existence in New York harbor. The location announced is on the New Jersey shore of the Staten Island Sound or Arthur Kill. An option on this property, it is said, has been secured from the Canda Mfg. Company of Carteret, N. J., and 11 Pine street, New York.

John W. Young is promoting the project. He is associated with the law firm of Alexander & Green of 120 Broadway. He also makes his headquarters at the offices of the Canda Mfg. Company, at 11 Pine street. It is stated that Lewis Nixon, owner of the Crescent Shipyards, is to be in direct control of the management of the plant, and that Naval Constructor Bowles will be associated with him. Alvin W. Krech of the Mercantile Trust Company is also identified with the underwriting of the project. None of the parties interested would discuss the plans of the company, stating that the complete details would be made known officially within a few days.

The Western Electric Company, Chicago and New York, have established a branch at 933 Market street, Philadelphia, Pa., by which they will be better enabled to serve their customers in and around that city. The construction department of the company is very busy, and contracts have recently been made for installing power plants for the Toledo Heating & Lighting Company, Toledo, Ohio; the Electric Railway, Light & Ice Company, Junction City, Kan.; E. W. Reed & Co., Kansas City, Mo.; Illinois Central shops, Waterloo, Iowa; David Cook Publishing Company, Elgin, Ill., and two dynamos and arc lamps for Carson, Pirie, Scott & Co., Chicago, Ill.

In the United States Circuit Court, at Pittsburgh, J. J. Spearman of the Spearman Iron Company, at Sharpsville, Pa., and Hugh Kennedy of the Blast Furnace Department of the American Steel Hoop Company entered suit against the Bellefonte Iron Company, at Bellefonte, Pa., to restrain the latter from using a patent device on hot blast stoves.

The Columbus Forge & Iron Company's new shop at Columbus, Ohio, is being rapidly pushed to completion. They will operate three large double stand hammers and four smaller ones in the new shop. More than half the equipment, including furnaces, boilers, stacks, punches, shears, presses, and some special machinery, has already been ordered, and orders for the balance will probably all be placed within the next few days.

Pacific Coast News.

SAN FRANCISCO, CAL., April 15, 1901.—The oil development in this State during the past year has been one of the most extraordinary on record, and effects very much every line of business within our borders, especially the hardware and metal trades. In fact, most of the supplies needed are of that order, or are manufactured from iron and steel, such as pipe, drills, picks, derricks, storage tanks, tank cars, shovels and all kinds of carpenters' and blacksmiths' tools. Besides these, building hardware and the multitude of articles used in refineries, &c., are called for. The development is extending to every part of the State. For years it languished along in Los Angeles and Ventura counties. When the excitement began about a year ago it started in Fresno and Kern counties; now it has extended to Tulare and Kings, in the lower San Joaquin Valley, to San Diego, Santa Barbara and Monterey, the southwestern coast to Santa Cruz, Contra Costa, Yolo and Colusa counties, on the Bay of San Francisco, and the lower Sacramento Valley to Shasta and Siskiyou, in the north of the valley and to Humboldt on the coast north of San Francisco. Oregon and Washington have both caught the infection. Company after company have been formed, some to bore for oil, some to buy land, some to sell it, &c. The general mode of procedure is as follows: Those who wish to form a company get together, appoint officers, file articles of incorporation, buy or lease lands in likely sections and then proceed to sell stock. The general number of shares is 100,000, of the par value of \$1 each. A certain proportion of the stock is set aside to form a working capital—say from 25,000 to 50,000 shares sold at 10 cents a share. After a while it is raised to 25 cents, then to 50 cents, till, finally, \$1 is reached. During the past year the stock of many companies has advanced in value from \$1 to \$10 and \$15. Owing to this, and to the fact that the production of oil has enormously increased, and that some of our largest manufacturing establishments have started to use it, the stock generally sells fairly well. Of late, however, there has been a depression in the value of shares on the stock board. But it is predicted that this is merely temporary. Certain it is that if the new wells now being put down give a decent return there will be no limit to the value of these stocks.

But perhaps the most important feature connected with this business is the use of oil as fuel in manufacturing establishments. Dear fuel has hitherto constituted one of the greatest drawbacks to our success in manufactures. But oil at \$1 a barrel is equivalent in the production of steam to coal at \$3.50 per ton. This at once places us, as far as fuel is concerned, on a level with the most favored localities in the United States except where coal is sold at the pit's mouth. And with the whole Orient as our market we want only good supplies of raw material. With abundance of iron ore we should have cheap iron and steel. But petroleum cannot be used in smelting ore. The cost of pig iron laid down is, however, less than that of articles manufactured from iron and steel, so that we can import from the South and the East pig iron and ingot steel and still have the advantage. Our iron and steel industries are at the present time most active, with the result that workmen are obtaining in many instances higher wages. The recent strike in the Union Iron Works has terminated in favor of the workmen, in part at least. The riveters, to the number of 200, walked out in support of the fitters and a compromise was arranged. In future no more handy men will be employed as fitters until they have served what is equivalent to a term of apprenticeship.

For the general trade of the State good crops are the one thing needed. The cereal crops, as a rule, look well, but late sown grain needs more rain. With that we shall have more than an average crop. Heavy frosts of late have done considerable injury to fruit trees, grape vines, &c. There will be a thinning out of the fruit on the old trees, and in some places total loss. But the new trees coming into bearing will largely make up for this, so that the chances are that we will have as large

a crop as ever. The farmers will thus be prosperous and trade will be larger this fall than ever before. The exchanges of the Clearing House have been from \$2,500,000 to \$3,500,000 more every week than they were a year ago, and for March they were \$93,611,432 against \$81,913,096 for March, 1900. This is a heavy gain in one month, and shows that 1901 is likely to be a phenomenal year. The employees in the great hardware and iron establishments are just as busy as they can be at this season of the year.

J. O. L.

The newly completed Olympia Mills at Columbia, S. C., designed by W. B. Smith, Whaley & Co., have been equipped with a somewhat novel arrangement of the blower system for heating and ventilating. Two 14-foot Sturtevant fans force the unheated air through horizontal underground ducts extending along both side walls. Branches from these ducts connect with vertical flues built in the side walls and deliver air to the various floors. Instead of the usual coil arrangement at the fan, Sturtevant standard corrugated sectional base coils are placed in the main ducts where the flues connect with them. This arrangement was used in order that the amount of heat supplied to any part of the mill building could be controlled without affecting the air supply. It also saves the loss of heat in the main ducts in the basement and permits the use of slightly smaller ducts on account of the lower temperature of the air. All apparatus for this system was furnished by the B. F. Sturtevant Company of Boston, Mass.

Charles M. Schwab, president of the United States Steel Corporation, will give an address at the commencement exercises of the St. George's Evening Trade School in St. George's Memorial Building, 207 East Sixteenth street, New York City, on Wednesday, May 8. Prizes and diplomas will then be given to the members of the graduating classes. The work of the school for the last season was exhibited on Wednesday, Thursday and Friday evenings of the present week at the school building.

The Shunk Plow Company of Bucyrus, Ohio, are shipping two steel wagons to Chinde, South Africa, via Port Natal. The wagons are 12 feet long, 4 feet wide and 6 feet high, and have 3-inch solid steel axles and 8-inch steel tires. They have a capacity of 16 tons each and will be used for hauling freight, being operated in trains of three wagons each pulled by a traction engine.

The Census Bureau has issued a bulletin announcing that the center of population of the United States, exclusive of Alaska and recent territorial acquisitions, was situated on June 1 last 6 miles southeast of Columbus, Bartholomew County, Ind.

Considerable excitement prevails in Northern Ohio over the strike of a rich vein of oil near Jefferson on Monday. The oil was struck at a depth of 2100 feet. Gas was found with the oil, but no salt water. For months the drill has been busy in that region and this is the first actual result.

The Standard Electric Company of California have just completed the installation of one of the longest power transmission systems in the country. The circuit extends from Blue Lakes, in Alpine County, to San Jose and Oakland, and covers a distance of 352 miles.

John C. Fleming, manager of the Chicago office of the Carnegie Steel Company, retires from that position 15th inst. He has represented the Carnegie Works in Chicago for 17 years and retires to enjoy the ample means he has accumulated.

New arrangements are pending for the sales departments of the constituent companies of the United States Steel Corporation, but details are not ready for announcement.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING MAY 1, 1901.

Cap'l Issued.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Closing		Sales.
							quotations.	Sales.	
\$10,000,000 Am. Bicycle Co., Com.	6½-7½	-7½	.....	.....	7½-7½	-7	7	2,200	
20,000,000 Am. Bicycle Co., Pref.	30-30½	33-34½	.....	.....	-33	.....	.....	4,000	
10,000,000 Am. Bicycle Co., Bonds.	81½-82	.....	.....	.....	.....	.....	.....	13,000	
29,000,000 Am. Car & Foundry Com.	25½-26	25½-26	.....	25½-26	25½-26½	25½-26½	26	12,500	
29,000,000 Am. Car & F'ndry, Pref. \$.	-79½	79½-79½	.....	79½-80	80-80½	80-80½	80	4,800	
7,500,000 Bethlehem Iron†.	.....	.....	.....	-60½	60½-62	62½-63	-63	422	
15,000,000 Bethlehem Steel††.	.....	21½-21½	21½-21½	21½-22½	22½-23	22½-23	.....	9,597	
7,974,550 Cambria Iron, Phila.*	-46%	.....	.....	.....	46%-47	.....	.....	123	
16,000,000 Cambria Steel**.	23½-23%	23½-23%	23½-24	23½-24%	24½-24%	23½-24%	24	27,679	
17,000,000 Colorado Fuel & Iron.	96-98½	97-101½	.....	104-108	105-108½	101½-107	107	23,800	
24,410,900 Crucible Steel, Com.	.....	.....	.....	-26	-26	.....	.....	200	
24,399,500 Crucible Steel, Pref.	.....	.....	.....	.....	.....	.....	.....	.....
1,975,000 Diamond State Steel†.	6½-6½	-6%	.....	-6½	6½-6½	.....	.....	2,572	
15,000,000 International Pump, Com.	39-39½	39-39½	.....	39½-40	39½-39½	39-39½	39½	3,300	
12,500,000 International Pump, Pref.	.....	.....	.....	.....	-81½	81½-82	81½	300	
11,000,000 International Silver.	-33	.....	.....	-6	.....	.....	.....	200	
5,000,000 Penna., Com., Phila.	.....	.....	.....	.....	84½-85	.....	.....	300	
1,500,000 Penna., Pref., Phila.	-90	.....	.....	.....	.....	.....	.....	82	
12,500,000 Pressed Steel, Com.	45½-46	46½-47	.....	-47	45-47	45½-46½	46	11,800	
12,500,000 Pressed Steel, Pref.	83-84%	84½-86	.....	86-89	87-87½	85½-86½	86½	15,300	
27,191,000 Repub. Iron & Steel, Com.	20½-20%	20½-21	.....	21½-21½	21-22	20½-21½	20%	13,000	
20,306,900 Repub. Iron & Steel, Pref.	76-77	-77	.....	77½-77½	74½-78%	77½-78	77½	8,100	
7,500,000 Sloss-Sheffield S. & I., Com.	36-37	36½-38	.....	36½-39%	38-41	40½-40%	40½	5,700	
6,700,000 Sloss-Sheffield S. & I., Pref. \$.	.....	.....	.....	.....	78½-84½	-85	85	600	
20,000,000 Tennessee Coal & Iron.	65½-67%	66½-68½	66½-67	65½-67	66-68	65-67	66	32,740	
1,500,000 Tidewater Steel†.	-8½	-8½	-8½	8½-8½	.....	.....	.....	444	
425,000,000 U. S. Steel Co., Com. ||.	45½-47%	47½-48½	48½-49	49½-52	53-55	53½-54½	54½	1,028,400	
425,000,000 U. S. Steel Co., Pref. ||.	93%-94%	95½-96½	96½-97½	97½-99	99½-101%	100½-101%	101½	472,010	
1,500,000 Warwick I. & S. ||.	-7½	7½-8	.....	.....	.....	.....	.....	990	

Preferred stocks 7% cumulative unless otherwise stated. 7½% Non-Cu. | Par \$10. || Par \$50. \$1 paid in. || Authorized Capital \$550,000,000 Common; \$555,000,000 Preferred; *Par \$50. **Par \$50. \$10.50 per share paid in. +6½% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph.

Bonded Indebtedness: American Bicycle Co., \$10,000,000 sinking fund gold debentures 5%; Cambria Iron Co., \$2,000,000 6½% debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co., property leased from Diamond State Steel Co. at 4% on \$1,000,000. \$6.25 on Steel stock paid in. \$1.25 called for June 1st, total capital \$2,000,000; Tennessee C. I. & R. R. Co., \$8,867,000 6%, \$1,114,000 7%, \$1,000,000 7½% cu. pref.; Pennsylvania Steel, \$1,000,000 1½% Steelton 1st, 1917, \$2,000,000 5% Sparrow's Point 1st, 1923, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col. Fuel Co. Gen. Mort. 6% \$890,000, Col. Coal & Iron Co. Mort. 6% \$2,810,000, Col. Fuel & Iron Gen. Mort. 5% \$2,304,000, also outstanding \$1,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6%, \$3,000,000, Sloss I. & S. general mortgage 4½% \$1,000,000. U. S. Steel Corporation \$304,000,000 5% gold bonds, also Am. S. & W. Co. \$130,656. Federal Steel Co. \$9,822,000 Illinois 5%, \$7,417,000 E. J. & E. R. R. 5%, \$1,600,000 Johnson 6%, \$8,72,000 D. & I. R. R. 5%, \$1,000,000 2d D. & I. R. R. 6%, \$10,000 land grant D. & I. R. R. 5%; National Steel \$3,581,000 6%.

Iron and Industrial Stocks.

The week has been characterized by an enormous speculation in the United States Steel stocks, which advanced from 45½ for the common and 93% on the preferred on Thursday last to 54½ on the former and 101½ on the latter to-day. The sales for the week ran over 1,000,000 shares of the common and 470,000 shares of the preferred. There is strong evidence that foreign speculators have taken hold. It is stated that the earnings will justify an early dividend on the common stock.

There have been fairly large transactions in Cambria Steel, which has advanced to 24. Colorado Fuel reached 108½ on Tuesday and has been quite active.

The directors of the Tennessee Company are considering a new bond issue. The plan is to issue \$15,000,000 bonds, part for funding the company's indebtedness, the proceeds of \$3,000,000 for working capital and \$2,000,000 to be kept in the treasury. The bonded indebtedness of the Tennessee Coal & Iron Company is \$10,173,000, all the issues, except \$612,000, bearing interest at the rate of 6 per cent. It is said that the new issues will bear 5 per cent. interest.

Bid. Asked.

E. W. Bliss, common.	140	..
E. W. Bliss, preferred.	125	..
Cramp's Shipyard stock.	73	80
Dominion Iron & Steel Company.	38½	..
Empire Iron & Steel, common.	6	8
Empire Iron & Steel, preferred.	40	45
National Enam. & St., common.	23	25
National Enam. & St., preferred.	83	85
New Haven.	4½	5
Otis Elevator, common.	34½	35½
Otis Elevator, preferred.	93½	94½
Pratt & Whitney, common.	3½	5
Pratt & Whitney, preferred.	85	90
U. S. Cast Iron Pipe Company, common.	8½	9½
U. S. Cast Iron Pipe Company, preferred.	40%	41½
U. S. Projectile.	114	..
Va. C. I. & C. stock.	8	9
Va. C. I. & C., bonds.	55½	56½
H. R. Worthington, preferred.	112	..
American Tin Can, common.	30%	31½
American Tin Can, preferred.	79%	80

Out of 300,000 shares, 286,022 shares were voted in favor of the plan for turning over the property of the Diamond State Steel Company to the new organization.

Dividends.—The directors of the Westinghouse Electric & Mfg. Company of Pittsburgh have declared the regular quarterly dividend of 1½ per cent. upon the as-senting or second preferred stock of the company, payable May 15.

The Shelby Iron Company have declared a dividend of \$5 per share, payable May 15.

The Bethlehem Steel Company's directors have declared the usual quarterly dividend of 50 cents per share.

The Pressed Steel Car Company's regular quarterly dividend of 1¼ per cent. on the preferred stock is payable May 22. Books close May 1 and reopen May 22. The dividend of 1 per cent. on the common stock is payable May 29. Books close May 8 and reopen May 29.

What is said to be the second highest chimney in Europe has just been constructed at Hoboken, Holland. The chimney, which is for a silver works, is 406 feet high, with a diameter at the base of 25 feet and at the summit of 10 feet.

The business men of Manistee, Mich., have organized a Bureau of Publicity and Promotion, and are offering inducements to manufacturers to locate in that city.

The official trial of the new torpedo boat "Bailey," made last week off New London, Conn., resulted in the eclipse of all former records for this class of vessel. The "Bailey" maintained an average speed of 30.2 knots during the entire two hours, and at one time reached a speed of 31.12 knots. During the trip the engines worked smoothly, the propellers making an average of 403 revolutions.

The Chicago Machinery Market

Office of *The Iron Age*, 1205 Fisher Building, Chicago, April 29, 1901.

Reports from the various branches of the machinery trade are of a generally satisfactory character. In truth, fewer complaints of the condition of business are now heard than for a long time. Those branches which seemed to be lagging have taken on renewed activity, and orders are being received which reflect the generally prosperous condition of the West. New enterprises and improvements in old manufacturing concerns are becoming more numerous, and the outlook is consequently very encouraging.

The possibility of labor troubles is causing some of the machinery manufacturers to be careful in taking on fresh business at this time. All manufacturers, of course, insert a strike clause in their contracts, but additional precautions seem to be desirable at this time if the buyers are urgent for as early delivery as possible. They are made to understand that if deliveries are not made when desired it will not be the fault of the machinery builders. The activity of the local jobbing machine shops has been pretty well demonstrated the past week by parties from other cities who desired special work done here. Application at one shop after another disclosed that the local people were too busy to be able to take such work and promise anything like a satisfactory delivery. Machinists are also reported to be quite scarce.

Engines.—A good demand for all kinds of engines continues. The larger sizes are selling best, but there is no complaint to offer from those who make small ones. A few large orders have been booked, probably the largest being an order for 32 150 horse-power engines for an enterprise of which the details are kept private. The demand for second-hand engines continues greater than the supply, and inquiries are becoming more numerous. A few nice contracts for large second-hand engines of all kinds have been closed, but enough cannot be obtained to fill the orders for small or medium sized ones.

Gas and Gasoline Engines.—Dealers in these engines concur in the report that there has never been a better trade in this line. The activity, however, is inducing an increasing number of people to engage in the business, causing greater competition. The demand seems to be better for medium sized and large engines than for small ones. It is now a common occurrence to sell a 160 or 180 horse-power engine, whereas a few years ago the same buyers would have scouted the proposition to rely on anything but steam to develop such power.

Electrical Machinery.—The season for electrical mining machinery has not yet opened, but the factories are fairly busy. Most of the manufacturers are accumulating stock, preparing for a strong demand. Electrical railway supplies are readily sold, and the demand is increasing to such an extent that one of the largest electrical manufacturers in the United States, located in Chicago, has determined to add that branch of business to those now being conducted.

General Machinery.—Several machinery manufacturers have recently gone into the manufacture of grain elevator machinery, which just now is having a great demand. Another large elevator is about to be built at Chicago, and several are under construction at different points in the West and Northwest. The demand for molding machinery continues good, as also that for core machines. The factories which are engaged in the manufacture of general elevating, conveying and power transmitting machinery are not as busy as they ought to be this time of the year. The season for that class of machinery and appliances is delayed, but the prospects are good and a heavy trade is expected.

Machine Tools.—The manufacturers of and dealers in machine tools have had a better business in April than during any of the immediately preceding months. The orders placed have included quite a number of good equipments from railroad companies, but other users of machine tools are also liberal buyers. The volume of business in single tools or orders for two or three tools is running up to such proportions as to make this class

of trade yield better results than usual. New projects involving the use of machine tools are developing, and the generally prosperous condition of the country promises to keep business of this kind quite active. The only element of uncertainty now clouding the situation is the possibility of labor troubles among the machinists. These troubles are not considered of any special moment by manufacturers who are members of employers' associations, but are regarded with more apprehension by employers who are proceeding independently. Thus far the indications point strongly to an amicable settlement of points in dispute. Railroad shops in this city have been considering the matter for the past week or two, and in some instances a basis of settlement has already been reached. It is claimed by the representatives of the machinists that they have been successful in such cases in securing all the concessions asked for, but this is denied by representatives of employers, who state that in all such cases a compromise has been effected which gives the latter some little claim that their opinions and desires have been considered by the men. It is, of course, strongly hoped that no troubles will be experienced which will lead to any serious clash of interests.

The Marshall & Huschart Machinery Company, 62 and 64 South Canal street, Chicago, have enjoyed a greatly improved business in machine tools during the month of April and believe it the largest month they ever had. They find not only a good demand for single tools, but have also enjoyed good orders for large equipments. They have sold during the month 12 engine lathes to one concern, all of them direct motor driven, and eight lathes to another establishment. They report plenty of business in sight, which will soon develop if not interfered with by labor troubles among the machinists.

C. H. Besly & Co., 10 and 12 North Canal street, Chicago, report a strongly sustained demand for machinists' tools and general manufacturing supplies. This demand has now continued for many months, and it appears easier to sell the class of goods they handle than at any time in the past. They are finding manufacturers of brass goods making much slower deliveries, apparently being very full of work. The firm are running their factory at Beloit, Wis., 22 hours a day to keep up with the demand for their Gardner grinders, Bonanza oil cups, and taps and dies. They made a shipment of five Gardner grinders to Philadelphia last week. The demand for these specialties is steadily increasing. A great deal of business is expected to come from the equipment of new shops. Enterprises of this character are continually increasing.

McDowell, Stocker & Co., 59 and 61 South Canal street, Chicago, report an excellent and decidedly satisfactory volume of business in machine tools. April trade has run somewhat larger than March, notwithstanding the fact that the greater part of the business by far has consisted of what might be termed pick-ups.

Joseph T. Ryerson & Son, 19 Milwaukee avenue, Chicago, have been appointed agents for the sale of R. D. Wood & Co.'s hydraulic riveters, flanging presses, &c., for boiler shops. They have just taken an order from Heggle Bros., Joliet, for a 10-foot 6-inch hydraulic riveter, and quite a number of orders for the Lennox bevel and splitting shears, in the territory ranging from Ohio to Minnesota. They find the demand improving for machinery used in boiler and tank building shops, as the prosperity of the past two years is enabling manufacturers in this line to equip themselves with improved appliances.

The Dearborn Mfg. Company, manufacturers of special machinery, dies, tools, &c., have removed from 26 and 28 West Randolph street to 58 and 62 North Jefferson street, Chicago. They have augmented their shop equipment by the addition of a number of punching presses, drills and lathes, and are now enabled to turn out three times as much work as heretofore.

The Drake Standard Machine Works, builders of special machinery, 396 to 400 Jackson boulevard, Chicago, suffered a loss of \$10,000 by a fire which occurred Monday, April 22. The damage was fully covered by in-

surance. Arrangements were at once made to resume, and the factory is again in operation ready to fill orders.

The Pearson Machine Company, Randolph and Canal streets, Chicago, are securing considerably more business for automatic screw machines and other machines of their special design. They ascribe the increasing trade to some extent to the greater efforts recently made to personally ascertain the needs of the trade, but some part of the improvement is due to the generally active condition of manufacturing industries. The company are shipping some of their special machines to Eastern shops in direct competition with tools of the same character made in that locality.

The Charles F. Elmes Engineering Works, Fulton and Morgan streets, Chicago, report their business steadily growing larger. Trade was quiet with them at the opening of the year, but recently much improvement has been noticed, and they are now figuring on about \$500,000 worth of work. They are doing a great deal in hydraulic work, special machinery and the building of engines to order. They have recently done some notable work in equipping Chicago newspaper offices with air lifts. They have installed air compressors which operate air lifts in raising heavy rolls of paper to printing presses, as well as handling the paper in other parts of the establishment. These lifts consist of a cylinder with a ram, placed vertically under a platform to receive the paper.

The Camp Engineering Company, who recently removed from 16 and 18 South Canal street to the four-story structure at 47 West Lake street, have closed a contract for a 100 horse-power New York Safety engine for the Zinn Electric Light Company, Oxford Mills, Iowa, and for a 100 horse-power slide valve engine for the American Slaughtering Company, Chicago.

Norman Bros., Western agents for the Brown Gas Engine Company, have removed from 43 Washington street to 49 West Lake street, Chicago.

The Graton & Knight Mfg. Company, Chicago, report that they have recently secured belting orders and contracts to the amount of \$100,000 in and around Chicago and Atlanta, Ga. They will soon add a full line of emery wheels and rubber belting to their general stock, and intend to establish a warehouse at their old location, 171 South Canal street.

The Charles Munson Belting Company, Chicago, have recently shipped two 60-inch three-ply leather belts to the Dallas Electric Light & Power Company, Dallas, Texas. They have also received orders for belting from the National Cooperage Company, Peoria, Ill.; Rubber Paint Company, Chicago, and are about to ship a large order to Copenhagen, Denmark. The company will shortly add a full line of belting supplies to their stock.

The Hansell-Elcock Foundry Company, Twenty-third place and Archer avenue, are erecting an addition to their structural shop. It will be 75 feet wide, 200 feet long and 50 feet high, will be equipped with a 15-ton electric traveling crane, and will contain a number of machine tools.

John Mohr & Son, boiler makers, Chicago, are considering plans for an office and light manufacturing building which they will erect near their North Side Works at 32 Illinois street. The building will be six stories high, and will cost about \$50,000.

The Western Electric Company, Chicago, are about to move into their new cable mill at Polk street and the Chicago River. They are also completing a machine shop, 80 x 120 feet, and will equip it with the latest machine tools, including an electric traveling crane. The company have established their St. Louis branch with the Mercantile Electric Company.

Henion & Hubbell, dealers in mill supplies and brass and iron pumps, Jefferson and Fulton streets, Chicago, are forced to enlarge their offices in consequence of the increase in business. Their sales this year are fully 25 per cent. in excess of those of the corresponding months of 1900.

The Weir & Craig Mfg. Company, manufacturers of packing house and special machinery, air compressors and plumbers' supplies, 2421 to 2439 Wallace street, Chicago, have secured contracts for installing all the beef

conveyors and hog scraping machinery in the plant of the T. H. Hammond Company, Hammond, Ind.; for all the shafting and pulleys, oleo presses and hog scraping machinery for the new plant being erected at Chicago for Schwartzschild & Sulzberger, and for the packing house equipments and supplies for the Dolt Packing Company, Wichita, Kan., and Nelson Morris & Co., Chicago. The company have lately made several improvements in their plant, and are now one of the largest packing house machinery manufacturers in the West.

The Morgan-Gardner Electric Company, 2640 to 2644 Shield avenue, Chicago, have moved into the building adjoining their factory and will hereafter occupy both places. Their new acquisition is 45 feet wide, 250 feet long and two stories high, and will give them almost double the space they had heretofore. The company will continue to manufacture electrical mining machinery. They have recently closed contracts for equipping power plants for the Hazel Kirk Gas Coal Company, Hazel Kirk Siding, Pa.; D. F. Kennedy, Bulger, Pa.; United Coal Company, Patterson, Pa.; Montgomery Coal Company, Montgomery, W. Va.; McLeish Coal Mining Company, McLeish, Ohio; W. P. Rend & Co., Thurmond, W. Va.

The Hamler Boiler & Tank Company, 3906 to 3910 South Halsted street, Chicago, are erecting an addition to their factory. The new shop will be two stories high, 20 x 60 feet, and will serve as a machine shop. The company have recently closed a contract for furnishing 350 car tanks for a local railroad company, and have secured a contract for a smokestack which will be 149 feet 6 inches long when completed, forming the highest stack in Chicago.

The S. Obermayer Company, Nineteenth and Rockwell streets, Chicago, have received orders for cupolas from the Art Bedstead Company, Chicago; the Youngstown Engineering Company, Youngstown, Ohio, and the Montana Iron Works, Butte, Montana. Theodore Kauffman, manager of the Chicago factory of the company, has just returned from a trip through the West. He reports that the prospects for good trade are very flattering, the iron and steel foundries working to their full capacity.

The Harrington & King Perforating Company, 209 North Union street, Chicago, have been running their works on full time for many months. Notwithstanding the severe competition for orders in this branch of trade, the company by careful discrimination secure a class of business which is yielding satisfactory results. They are now at work on some of the heaviest mining orders they have ever received. These orders include carloads from the Homestake Mining Company of South Dakota, and the Anaconda Copper Mining Company of Montana. They are also doing a good volume of export business and find this trade steadily growing. The facilities of this plant have been steadily enlarged and improved to enable the company to meet with all the peculiar requirements of this special branch of trade, and much business is consequently received by them which is due to their ability to make what is wanted accurately and promptly.

The Interstate Foundry Company of Cleveland are erecting at Thirty-sixth street and Western avenue, Chicago, a large iron foundry, where they will engage extensively in the making of special castings, such as sewing machine frames, &c. They have purchased part of their equipment the past week.

The Crane Company, manufacturers of wrought pipe, fittings and valves, will erect a new office building at Twelfth and Canal streets, Chicago. It will have five stories and basement, and will cost about \$100,000. The site selected adjoins several factory buildings of the company and is about 90 x 100 feet. The Crane Company have branch offices in many of the leading cities of the country, but their general offices are in Chicago, where their manufacturing operations are conducted. The company are also arranging for the erection of a hospital at Twelfth place and Judd street for the free use of the sick and injured in that vicinity, as well as their own employees.

J. B. Carroll, manufacturer of Hahn acetylene gas burners, recently at 84 Market street, Chicago, has removed his office to 38 La Salle street. Mr. Carroll is now engaged in fitting up a factory on Lake street which will occupy a floor space about four times as large as that of his present factory, and he expects to have the most complete establishment in the United States devoted to the manufacture of acetylene goods. The acetylene supply business is rapidly growing as the use of acetylene gas becomes more general. The increase in Mr. Carroll's facilities has specially been made necessary by the rapidly growing demand for Hahn acetylene burners.

The New York Machinery Market.

Office of *The Iron Age*, 238-258 William street, New York. May 1, 1901.

In reviewing the month of April the same peculiar state of affairs presents itself as has characterized the market during the preceding months of this year. It has been a month of many inquiries, a comparatively small amount of which were actually closed. Nevertheless, it cannot be looked back upon with disappointment, for when the order books are consulted it is found that actually a pretty fair amount of business was closed. Relative to the number of inquiries received the business does not show up heavily, but forgetting the business that failed to materialize, the contracts closed amounted to a fair volume.

In looking at the great mass of correspondence which thus far can only be termed as inquiries machinery merchants have been apt to overlook the importance of the business which they really closed.

The large builders of almost every line of machinery claim that their shops are well filled with work and that they are naming deliveries which in some instances extend several months into the future. To a certain extent this condition of affairs is naturally reflected down along the line of the smaller manufacturers.

It is doubtless true that the concerns who have had the hardest time of it are those who have centralized their efforts on special machine tools, getting them out in large quantities, and who relied to a considerable extent upon their European representatives for relieving them of a goodly portion of each "gang" as it left the assembly room. In some instances these concerns have accumulated pretty good sized stocks owing to the absence of demand from abroad. They were able, however, to stand off the brunt of the storm and maintained values in the face of their rapidly multiplying stocks.

We understand now that these stocks have been reduced considerably through the increase in domestic business which offset the slump in export trade.

The market for heavy tools is so well controlled that no difficulty was encountered in maintaining it on a steady basis. Prices have been upheld most rigidly and the builders are talking of far distant deliveries. A feature in connection with the heavy tool market, which is becoming noticeable, is the passing of the great heavy lathe. Of course there are certain lines of work which will always require the services of the "big lathe." But a good portion of the work formerly performed on this machine is now executed more advantageously on the boring mill.

Now there is talk of a prominent builder bringing out another machine which may further decrease the demand for the powerful machines now made with long beds and wide swing. The party referred to are bringing out a lathe designed especially for turning shafting. It will contain a long bed, but instead of the wide swing and great face plate it will be small and compact at the headstock, having only such swinging capacity as is necessary in the turning of shafting.

A transaction of considerable moment was carried through during the month of April in the consolidation of the four large engine and mining machinery concerns. In another column an official statement is printed, giving details of the amalgamation of the E. P. Allis Company, Fraser & Chalmers, the Gates Iron Works and the Dickson Mfg. Company. A feature of interest in this latest

combination is found in the personnel of the directorate. It will also be observed that mention is made of the new Allis plant, it being stated that \$2,500,000 of the cash capital of the new company is to be immediately expended for this work. It is now evident why the purchase of the machinery for the new plant was deferred. As soon as the deal is entirely completed this equipment will doubtless be ordered. There has been an unconfirmed rumor afloat in the street to the effect that the new company will also build a large plant on the Atlantic seaboard. The parties who are spreading this report state that the object of the Eastern plant will be the erection of large marine engines.

In another column we present an interview of a representative of *The Iron Age* with an official of the Ordnance Bureau in Washington regarding the Rock Island Arsenal machine tool muddle. It appears that the closing of this matter is still a thing of the future.

There is a report in the street which comes with sufficient directness to make it appear as something more sober than a mere rumor, regarding the disposition which is to be made of the Rogers Locomotive Works of Paterson, N. J. It purports that Elliott C. Smith, one of the purchasers of the plant, is acting for a certain railroad or railroads who intend operating the works on an extensive scale, principally for the production of their own engines. Mr. Smith makes his headquarters at the offices of E. H. Norton & Co. of 33 Wall street, and it is stated that this concern are now perfecting the financial details of the plan. When seen by a representative of *The Iron Age* Mr. Smith stated that he was not in a position to discuss the matter and did not care to either confirm or deny it. He stated that the works would be put in operation about May 15, and while the intention is to re-equip the plant, no plans were as yet formed in this direction. We are informed on good authority that the new owners of the plant have been endeavoring to secure the Grant property, which is adjacent to the works. This property was recently purchased by the North Jersey Street Railway Company, who intend erecting a 100 x 600 foot car barn and repair shop on the site. The purchasers of the locomotive plant have made overtures to the North Jersey Company, but have been unable to secure the property. Thomas Cressey of Newark, N. J., who has prepared the plans for the car barns, states that the work is to go right ahead and that the new locomotive builders are looking elsewhere for room to extend the plant.

Judging from present indications, the New York Air Brake Company of 66 Broadway and Watertown, N. Y., have finally decided to build a plant in Russia. The directors of the company have just issued a circular to the stockholders to the effect that they have authorized the sale of 16,625 shares of the unissued capital stock of the company at par, the proceeds to be used "for the development of foreign business and the construction of additional works." Particulars are being withheld until the financial arrangements are completed. The company's plant at Watertown is equipped with an excellent complement of up to date machine tools.

We are informed that the Standard Air Brake Company of Jersey City, N. J., have their plans pretty well advanced for a large new plant and will purchase the necessary machinery very shortly. J. & W. Seligman, the New York bankers, are interested in this company. The new plant is to be located in Jersey City.

Bids just opened by the Navy Department for machinery are as follows:

PORTSMOUTH, N. H.

1. Niles Tool Works Company, Hamilton, Ohio.
2. Brown & Sharpe Mfg. Company, Box 29, Providence, R. I.
3. General Electric Company, Schenectady, N. Y.
4. American Tool Works Company, Cincinnati, Ohio.
5. Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.

Class 1. One electric generating set—Bidder 5, \$11,512; 3, \$13,150.

Class 2. One universal milling machine—Bidder 2, \$727.13; 1, a, \$771, b, \$801.

Class 3. One screw engine lathe—Bidder 1, \$276; 4, \$367.50.

PENSACOLA.

Bidder 1. Rockwell Engineering Company, 26 Cortlandt street, New York City.

2. Brown Hoisting Machinery Company, Cleveland, Ohio.
 3. American Contracting Company, 1221 Arch street, Philadelphia, Pa.
 Class 1. One plate and one angle furnace—Bidder 3, \$4980; 1, \$6500.
 Class 2. One hand pillar crane—Bidder 2, \$6325.

On May 14 bids will be opened at the Bureau of Supplies and Accounts, Navy Department, for two pillar cranes, a quantity of motors, tools, shafting, iron pipes, &c., for the naval station at Puget Sound, Wash.

The Robbins Conveying Belt Company of Passaic, N. J., propose erecting a large addition to their plant for the manufacture of a new line of patented coal conveying machinery. They will not require additional power generating machinery, but will install a considerable quantity of machinery, including machine tools as well as special machines.

Contractors submitted their bids last Monday for the superstructure and machinery equipment of the large grain elevator which is to be erected at Weehawken, N. J. It is estimated that the work will cost upward of \$1,000,000. It is being built for the West Shore Railroad Company, the New York Central & Hudson River Railroad Company acting as lessee. Among those who bid were V. J. Hedden & Co. of Newark, N. J.; Snare & Trieste of New York, George M. Mouton & Co. of Chicago, and James Stewart & Co. of St. Louis. Chief Engineer Kilgus of the New York Central Railroad Company received the bids. Estimates are now being prepared for the foundations and dock.

J. F. Rogers & Co. of 42 Cortlandt street have been awarded the contract for the machinery equipment of a new machine shop to be built at Cardenas, Cuba, by the Jucaro-Cardenas Railway Company.

At the office of the former concern it is stated that they have sublet the principal contracts and are placing the remaining orders with the firms whom they represent in New York City. The contracts for the boilers and engine were awarded to the Erie Engine Works of Erie, Pa. There will be two 70 horse-power boilers and a 120 horse-power engine. A contract for two saw mills was awarded to the Lane Mfg. Company of Montpelier, Vt. There will be about 16 other wood and metal working machines, besides shafting, hangers, pulleys, belting, &c., and saw tables, mortisers and borers. The contract for the steel building, which will be 75 x 320 feet, was awarded to Milliken Brothers of 11 Broadway.

An order has been awarded to the Edward P. Allis Company for an 800 horse-power cross compound condensing engine by the Midvale Steel Company. The new engine is to operate the machinery which will be installed in the additional buildings now being erected at the Nicetown plant.

It is reported that the Rochester Syndicate, which is composed chiefly of Anthony F. Brady and A. M. Young, have awarded the contract for the 12,000 horse-power of engines to be installed in the new Rochester plant to the Southwark Foundry & Machine Company. The Rochester Syndicate is the style of the concern which acquired the Rochester electric plants immediately after the recent fire. A reorganization scheme is now pending. The contract for the boilers was awarded to Mayer & Co. of 39 Cortlandt street a few weeks ago.

The J. H. Siegrist, Jr., Company, 253 Broadway, have just been awarded a contract by the Boston Elevated Railway Company, Boston, Mass., to furnish the Siegrist Oiling System for all the machinery in their new Lincoln Wharf Power Station.

A number of concerns will to-day occupy new quarters in the machinery district. The Babcock & Wilcox Company will be at their new quarters in the Singer Building, 85 Liberty street; M. T. Davidson will have moved to the Washington Life Building, 141 Broadway; M. S. Friede will be in new offices at the Empire Building, 71 Broadway; Takata & Co. will be working in larger offices at 10 Wall street; the Thornton N. Motley Company will be located at 12 to 16 John street, and Toritch & Co. will have moved to more commodious quarters at 13 William street.

A. Asher, dealer in blowers, engines, boilers and machinery, has removed his office to the Liberty Building, 123 Liberty street.

The Amalgamated Association's Policy.

Theodore J. Shaffer, president of the Amalgamated Association, is reported in a Pittsburgh dispatch to the *New York Times* to have announced the future policy of the organization toward the mills of the United States Steel Corporation. Briefly, President Shaffer's intention, it is stated, is to return to the old practice of fighting whenever the interests of the workmen are involved, and especially when the questions of personal action and wages are in jeopardy.

President Shaffer says that the decision was not reached hastily, and will be adhered to even if the results be serious. If the steel company choose to fight, the workmen will accept the condition. In future mills not operated under the scale will be regarded as "closed." No Amalgamated Association member will work in such mills. The policy of "open" mills, he says, has been a complete failure, notwithstanding the apparent liberality of mill owners, and will be abandoned.

Mr. Shaffer is in control of the association machinery, and his policy will be backed by the full support of the organization. He says the quick settlement with the Dewees Wood plant a few weeks ago is an example of the correctness of the latest method of dealing with a combined opposition. The Wood mill has successfully and peacefully defied the Amalgamated Association for 20 years, until a few weeks ago. He says that recent history proves the fallacy of continuing the policy of "open" mills.

The Ornamental Iron and Expanded Metal Workers recently organized in Pittsburgh and Allegheny and, embracing about 600 men, have just secured from their employers a new wage scale, effective May 1, which provides for an eight-hour day and an advance in wages. Under the new scale the fitters will be paid \$2.50 a day and the helpers \$2. Up to this time the men of this trade, which is of growing importance in Pittsburgh and other cities, have been paid from \$1.50 to \$2 a day of nine or ten hours.

The Texas Star flour mills, one of the largest concerns of the kind in Galveston, have equipped their plant to use oil for fuel and have contracted for a year's supply of Texas oil for the purpose. The concern are the first to use oil fuel in that district, but several other large interests in Galveston are preparing to follow suit.

Joseph Brucker, managing editor of the Illinois *Staats Zeitung* of Chicago, is about to sail for Germany for the purpose of establishing a "commercial embassy" in Berlin, with the object of promoting American trade in Europe. In connection with the commercial embassy he will publish, in both the English and German languages, a weekly paper, to be known as the *Columbia*. The paper is to work in the interest of friendly relations between this country and European nations. It will try to create a demand for American goods. Mr. Brucker's scheme is indorsed by many leading business men of this country.

The Russian Minister of Finance has announced that foreign coal imported for Government railroads will be admitted free of duty at all Russian ports until July 14, 1901, by which time, it is expected, the domestic supply will equal the requirements. In consequence of strikes at coal mines near Warsaw and Lodz, coal intended for use in those cities is admitted free, and a material reduction has been made in the duty on coal for use at Odessa, Sebastopol and Nikolaev.

The month of April was a record breaker in respect of capitalization of new incorporations, an aggregate of more than \$1,600,000,000 of new securities having been authorized. The enormous total, of course, was almost wholly due to the incorporation of the United States Steel Corporation in New Jersey, with \$1,400,000,000 of capital. The balance included the Pennsylvania Steel Company, with \$50,000,000 of capital, and the American Smelting & Refining Company, with \$35,000,000 of increase in capitalization.

HARDWARE.

In a communication published in another column a New York house refer to the price of Cut Nails, and the fact that in some markets at least the goods are obtainable by retail merchants in carload lots at the same prices as are paid by jobbers. This letter will command attention as bringing up an interesting question. Many will maintain that responsible houses in the trade purchasing in carload lots should be given equality of treatment, while others will take the position that a differential should be made in favor of the jobbing trade, as is so frequently done. We invite expressions of opinion on this subject from manufacturers and merchants.

The tendency toward organization among the retail trade is indicated in the formation of an association in Western Pennsylvania, as referred to in another column. The disposition of the retail Hardware merchants to unite in such associations for the advancement of their mutual interests has thus far been much more pronounced in the West than in the East. There are, however, some associations in the Eastern States which are doing effective work, and there is obviously an opportunity for the organization of others. Some projects are under consideration with a view to securing united action by the Western and Eastern trade so as to conserve mutual interests more efficiently. It is obviously desirable, so far as the welfare of the retail trade is concerned, that this movement should be representative of the trade in all sections.

The exportation of American manufactured merchandise is rapidly changing character and assuming larger proportions, just as the industrial consolidations in the United States have led to the concentration of purchases in the hands of large foreign houses fewer in number, but whose aggregate trade is much greater in volume than formerly, when goods were bought by a larger number of smaller concerns. The process of concentration is especially true of the important London market, where buyers for both hemispheres are established.

What the car lot is to the domestic trade the cargo has become to the exporter. A great house in New York refer to the fact that the loading of a steamer for a foreign port was formerly quite an event, but now it is a common occurrence with them. Among some of the representative export houses in New York it is not a question of seeking business; rather a continued reorganization of their forces so as to properly care for what comes to them.

The demoralization and depression in Germany are checking orders somewhat for American Iron and Hardware products. The existing conditions there are accounted for in part by the fact that the Germans have apparently overdeveloped their industrial facilities and invested too much in buildings and machinery, not reserving sufficient working capital with which to adequately handle their business. Two years ago, forecasting present conditions, some American export interests transferred their foreign credits from German banks to others in Great Britain and the United States. Large amounts of English capital which they have been using has been recalled on account of England's necessities, occasioned by the enormous unforeseen expenditures

for the Boer War, now in excess of \$700,000,000; and the end is not yet. But under the stimulus of the German Emperor, to whom a clear headed American exporter refers as the great commercial drummer of the age, Germany, while perhaps pushing ahead so rapidly that a proper equilibrium has not been maintained between fixed and mobile capital, has attained a commanding position in manufacturing and commerce. An instance of Emperor William's business traits is seen in his interference to save Turkey from the wrath of Europe on account of the massacres; now the Germans are selling the Turk war ships, guns and other material, the object and result of more recent ventures in South Africa, Samoa, China and elsewhere being also to secure foreign markets.

In any products for which a demand exists for great quantities, the United States have a permanent advantage in the large scale on which business is done. An important factor here, for example, is our unit of transportation, which for heavy bulk freight has become the 50-ton car. In England their unit is a 10-ton car, and the conditions must remain so without larger tunnels, broader ways and other radical changes.

Condition of Trade.

THE situation is characterized by the favorable features to which we have repeatedly referred. The volume of business is large, both with manufacturers and jobbers, and in many cases there is more or less difficulty in executing orders with sufficient promptness to serve the convenience of the trade. In several lines the manufacturers are largely oversold and have orders enough on their books to keep them busy for months. The strength of the Iron market gives tone to the prices for manufactured articles, and in almost every line the trade feel safe in buying with some liberality to cover the early requirements of their business. At the same time there is little speculative buying, as there is a feeling that after a while there will be a reaction from existing prices and a lower level of values reached. Throughout the country there is much activity in the enlargement of factories, building operations and enterprises in general. The laboring class are thus well occupied, and in many cases at somewhat advanced wages. Money is thus kept in circulation and a great mass of manufactured products are going into consumption. Export trade is large and increasing, notwithstanding the falling off in certain lines on account of the development of lower prices in English and Continental markets. What is gained in other directions probably fully makes up for such losses.

Chicago.

(By Telegraph.)

April, as predicted, was the banner month for both the Shelf and Heavy Hardware trade. The volume of business in dollars and cents was much in excess of any previous month. The sudden advent of summer weather through the Northwest has greatly stimulated some branches of the trade, seasonable goods being in much stronger demand. The whole Northwest is enjoying great prosperity, as agricultural products are now bringing high prices and farmers are consequently in fine financial condition. A great deal of activity is reported everywhere in all kinds of improvements. It is expected, however, that trade will show some falling off, as the good weather will now oblige the farmers to devote their attention to preparing for crops. The spring has been unusually backward, and the farming interest will

consequently be obliged to make up for lost time. The jobbing trade has recently experienced greater difficulty than ever in endeavoring to secure a sufficient supply of goods to satisfy their customers, especially Smooth and Barb Wire, Poultry Netting, &c. The largest manufacturers are unable, with their enormous facilities, to give anything like satisfactory service. The Woven Fencing manufacturers are behind on their orders 60 days or more. The Tin Plate trade has been almost in the same condition, but somewhat better deliveries are now being made. Jobbers will welcome a little respite from their arduous efforts to keep their customers in good humor. Prices are firmly maintained all along the line and no apprehension exists of any early recession in values, but on the contrary advances in some goods are foreshadowed. Axes, for instance, are expected to be marked up, and it would not be surprising to see changes in other lines in the same direction.

St. Louis.

The demand for Hardware keeps up remarkably well, and in comparison with the same period last year shows a very decided increase. There is great difficulty experienced in securing Plain and Barb Wire, Galvanized Iron and Steel Sheets. Buyers are willing to pay an advanced price if prompt shipment is guaranteed, but meet with no encouragement from mills, who are apparently doing all they can to furnish the material desired. The pleasant weather prevailing for the past several days has brought in a large number of orders for hot weather goods. Jobbers endeavor to persuade the retail trade to place their orders for this class of goods early, but without any apparent success. Every year as the warm weather opens up an avalanche of orders for hot weather goods is received and delayed shipments are, of course, the result. It is hardly necessary to refer to prices as being well maintained, as so long as there is difficulty in obtaining goods just so long will prices remain steady.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The principal matter of note at the present time is that all jobbers are trying to get their orders off as quickly as possible after they are received. This matter is quite important at the present time, as the opening of the spring trade for season goods was practically delayed a couple of weeks, owing to the inclement weather throughout the country, and especially adjacent to this immediate location. The number of unpleasant days of cold, wind or rain during the month of April reached about 25, which, of course, delayed outdoor work on farms or gardens. The advent of pleasant weather has, however, stimulated trade for season goods, and all houses are more or less busy on these articles.

There appears to be no disposition to cut prices on any of these goods; in fact, the market is not overstocked on any of them, and the probabilities are that before the month of May passes retail merchants will be clamoring for goods from jobbers, and jobbers will be clamoring for goods from manufacturers. There is every indication of a heavy trade. General Hardware is moving with a volume of trade above the average for this season of the year. There is less disposition for hesitancy on the part of buyers than there was six weeks ago from the fact that at that time retail merchants were inclined to believe there might be some decline; but the stiffening of prices on many leading goods, owing to the advance of raw material, has quieted all that feeling and the feeling of uncertainty that existed at that time has entirely disappeared; the consequence is trade is active without any disposition to shading prices.

Our collections have not been quite up to the standard the last 30 days, and the month of May should show improvement in that respect.

Boston.

BIGELOW & DOWSE COMPANY.—The rains and storms commencing the latter part of March have continued through the month of April until the 28th, when every

one was delighted to welcome back the sun, and with it the balmy air of spring.

The weather conditions for the past five or six weeks have been unusual and beyond the memory of the oldest inhabitant. It has been almost impossible to do any out of door work, and everything is backward.

The advent of seasonable weather will give new life, and the month of May should be a record breaker. The market prices of Hardware and the products of Steel are firm, and show an advancing tendency, while a year ago they were demoralized. The early sale of seasonable goods was larger than usual, and those who bought Fence Wire and have it in store will have the advantage of those buying now, when the mills are from three to six weeks behind in shipping present orders. Many manufacturers complain of delay in getting shipments of raw material.

The heavy stocks held by jobbers a year ago are reduced to normal, and a heavy demand will be hard to supply under present conditions.

The present month should be the banner month for Bicycle sales, as the last few days' orders would indicate.

There will be much more building this year than last. Everything looks prosperous.

Louisville.

W. B. BELKNAP & Co.—The all absorbing topic of interest hereabouts for the past week has been the flood in the Ohio. Every year when the winter is ending with its precipitation of snow and the spring opening up with its abundant rainfall, there comes the likelihood and dread of flood. Then those who live down in the low lands betake themselves to a floating existence in skiffs in and out of second story windows and more or less camping is done up on the higher and drier ridges which line the banks of western streams as natural levees.

We never have quite the rush of waters down here that they have up at the confluence of the Allegheny and Monongahela, where people's hair may turn white in a single night and their premises be yellow with mud for many a day thereafter, but the river grows very wide and majestic and has its own way pretty much until the great flood flows out into the greater channel of the Mississippi.

It has meant the cessation of work at mills on which this market is more or less dependent—viz., those at Pittsburgh, Wheeling, Ironton and Covington. Shipments are seriously interfered with, and stocks must be drawn on for current wants instead of the mill rollings. Altogether, whether we will or not, there must be an adaptation to the flood order of things for quite a little while.

Still more industrial combinations are being put into effect, the latest one that of Plow makers and manufacturers of Agricultural Implements. This, we understand, embraces the very large factory of Avery & Sons in our own city. Those writers who, a little time back, wrote themselves down as convinced that all of the industries which could be combined had been put through that process, will have to revise their statements. And if it is a bad day for original combinations, those which have already combined can snuggle up together, and like the two rabbits in the wonder working hands of the prestidigitator, we shall presently see but one, of somewhat more distended proportions, it is true, but nevertheless only one.

It is well that the theory of evolution has been fully accepted, for we should not otherwise know exactly what to call this extraordinary economic process that is still going on unabated.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—April trade has been good, and, in most respects, satisfactory. The Northwest has been free from disturbing storms, which have affected some other sections, and business, for the most part, has run along smoothly in the usual channels. There has been a steady demand for all lines of Hardware that the season requires, and the order floors have presented as busy an appearance as they have ever

made. The only serious trouble has come from the difficulty in getting goods.

In some lines this has become peculiarly aggravating, as in Barbed Wire, Poultry Netting and Field Fence, while it has been quite, though less, troublesome in Edge Tools, Carriage Bolts, Wire Stretchers, &c. We have no recollection of any time since Barbed Wire came into the market when there was anything like such difficulty in filling orders for it as exists at present, and this, too, notwithstanding the fact that orders and specifications were sent to the mills early in the winter. This condition of things puts both jobbers and the retail trade to a great deal of annoyance, certainly more, in the case of car lots, than the jobber is compensated for in the meager profit afforded him in the transaction, and probably, with the catalogue and supply house cutting into his ordinarily small profit, the retail dealer can say the same. Relief will come as the season advances. Some cancellations will be made, and there will be some soreness.

However, jobbers had probably about usual stocks when the season began, and have no good reason to blame themselves or to be blamed for the present conditions, though in some cases they doubtless did believe the mills would fill orders more satisfactorily than they have done.

The "powers that be" are to be commended for not advancing the price of Wire in line with this unprecedented demand, and the same is true of Sheet Steel and some other articles.

In these instances the great consolidations have shown conclusively that the consumer will not always be made to pay the highest price that these consolidations can force out of him. No one acquainted with the conditions doubts that Sheet Steel, for instance, could be advanced considerably, and also that it would have been done if the market had not been in the strong hands of a few. We may hereafter be made to see some evidences of the power and will of these vast consolidations that we cannot approve, but in this instance they are certainly to be commended, and it is to be hoped that they will generally be actuated by the same spirit.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—There is no change to note in the business situation as it exists to-day in the Pacific Northwest, or as regards the outlook as to the future. Immigration is making itself felt everywhere, as it did in the early nineties, and the outcome must, if it is continued, result in a boom, "as it did then."

Banks have more money on deposit than they can find legitimate uses for, and as soon as the speculative spirit is aroused and attention directed to the movement in real estate that is now setting in, the boom will be on in a night, as it is in the merchandise market, when buyers conclude goods are too cheap and an upward movement is started. Then, when too late, the unwary purchaser finds out the truth of the adage, "Buy when they all want to sell and sell when they all want to buy," a saying that should be heeded in Wall Street to-day, and unload while they all want the certificates. Later those same certificates will only be good to cover some shady transaction in bankruptcy, as companies themselves will be undergoing reorganization, with assessments pending, to get in on the deal.

Weather, so far, could not be more favorable for growing crops of all kinds if it was made to order.

Omaha.

LEE-GLASS-ANDREESON HARDWARE COMPANY.—This market, including the other jobbing centers located on the Missouri River, is devoid of any new or interesting features; a repetition of preceding reviews would cover the ground exactly. Business in all lines is flourishing, and the volume of goods daily going into consumption shows no abatement. Both jobbers and manufacturers have about all they can attend to, otherwise the market is featureless, with the exception that several leading lines of seasonable goods are remarkably scarce, and the demand being largely in excess of the supply, the

jobbing trade find it a most difficult task to supply the requirements of their customers with any degree of promptness.

A high measure of prosperity exists here as elsewhere, and the prospects for the future reflect a continuance of the present satisfactory conditions.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—April, usually a rather quiet month, has proved to be one of the best of the year this season. Sales in all departments were unusually large, especially on such lines as Nails, Fencing, Steel Goods, Enamored Ware, Wire Cloth, Poultry Netting and Freezers.

Fall orders for Guns, Cutlery and Axes are also being placed for future shipment. Dealers are buying Axes especially freely on account of the decline in price from last season.

The condition of the retail dealers in the South generally was never better than at the present time. They owe very little money, have well assorted stocks of merchandise on hand, are buying liberally and meeting their obligations promptly.

The same might also be said of the majority of the farmers and planters.

NOTES ON PRICES.

Wire Nails.—The demand for Wire Nails, which has been phenomenal this spring, continues to tax the capacity of the mills. Quotations are unchanged, as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

New York.—The conditions of the local Wire Nail market are the same as for some time. Orders represent the requirements of the trade. Quotations are as follows: To retailers, carloads on dock.....\$2.53 Small lots at store.....2.60

Chicago, by Telegraph.—Manufacturers report a continued heavy demand for Wire Nails, but jobbers state that better deliveries are now being made. Great activity in the building trade and in general improvements is causing such an enormous consumption of Nails that no serious falling off in the demand is apprehended. Carload lots are held at \$2.45 and small lots at \$2.55, with an occasional concession to \$2.50 to the best traders.

St. Louis.—A good inquiry is reported for Wire Nails, and locally a great improvement is noted. Building operations are on an increased scale and promise to continue so. Jobbers quote carload lots to retailers at \$2.50, base, and less than car lots at \$2.55, base.

Pittsburgh.—The heavy demand for Wire Nails, which has characterized the market for some time continues, and April, in point of production and shipments, will show the heaviest tonnage in any one month since the American Steel & Wire Company were organized. The smaller Wire and Nail concerns are also doing a very satisfactory business. There is still some trouble in getting deliveries of Nails as promptly as wanted by the trade. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

Cut Nails.—At the meeting of the Cut Nail manufacturers, held April 25, existing prices were reaffirmed for the month of May for domestic trade. Prices for export were advanced. The fact developed at the meeting that manufacturers would have to pay an advance on the former price of Steel Slabs, thus increasing the cost of Nails. Manufacturers' quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination; terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.00
To jobbers in less than carload lots.....	2.05
To retailers in less than carload lots.....	2.20

New York.—The demand continues in about the same volume for Cut Nails as for some time. Since the meeting of the manufacturers, one instance has come to notice where a special price was named for a good sized order. This does not, however, represent the market, which is, as a rule, firm at former prices. New York quotations for carload and less than carload lots are based on the above prices, to which Pittsburgh freight has been added:

Carload lots on dock.....	\$2.13
To jobbers in less than carload lots on dock.....	2.18
From store.....	2.25

Chicago, by Telegraph.—The volume of business continues about the same as reported in previous weeks, with prices of small lots from store unchanged at \$2.35.

St. Louis.—Some improvement is noted in the demand, but prices continue without change. Jobbers quote small lots at \$2.35 to \$2.45, base.

Pittsburgh.—There is a good volume of business in Cut Nails, and the product of the mills is being shipped out as fast as made. The tone of the market is strong. We note a heavy demand for Iron Cut Nails, the consumption of which, we are advised, is steadily increasing. To jobbers, prices are on carload lots \$2, and on less quantities \$2.05, f.o.b. Pittsburgh, plus the actual freight rates. To small dealers and consumers, \$2.20 rates, f.o.b. Pittsburgh, plus the actual current rate; terms 60 days, less 2 per cent. for cash in 10 days.

Barb Wire.—The trade are experiencing delay in receiving prompt shipments of Barb Wire. This is particularly true of those who have been dilatory in placing orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.60
To jobbers in carload lots, Galvanized.....	2.90
To jobbers in less than carload lots, Painted.....	2.65
To jobbers in less than carload lots, Galvanized.....	2.95
To retailers in carload lots, Painted.....	2.70
To retailers in carload lots, Galvanized.....	3.00
To retailers in less than carload lots, Painted.....	2.80
To retailers in less than carload lots, Galvanized.....	3.10

Chicago, by Telegraph.—Factories are as far behind as ever in making deliveries of Barb Wire. It is expected, however, that the demand will soon abate, as farmers are now getting actively at work preparing for crops. Carload lots are held at \$2.75 for Painted and \$3.05 for Galvanized. Less than carloads are quoted at \$2.85 and \$3.15, respectively, with shading of 5 cents to best buyers.

St. Louis.—Considerable difficulty is experienced in securing anything like prompt shipment of Barb Wire. Manufacturers are running their plants double turn, but are unable to catch up with their orders. Jobbers quote carload lots of Painted at \$2.80 and Galvanized at \$3.10; less than carload lots, 5 cents per 100 additional.

Pittsburgh.—The heavy demand for Barb Wire continues and seems to be getting larger. The trade are having great difficulty in getting shipments of Wire from the mills as fast as needed. The output of Wire at the present time by the American Steel & Wire Company and the small Wire concerns is much the heaviest ever known. For domestic trade we quote: Galvanized Barb Wire, \$2.90, in carload lots to jobbers, and Painted, \$2.60. Terms, 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—There is a continuance in the heavy demand for Plain Wire. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.		
Plain.	Galv.	

To jobbers in carload lots.....	\$2.25	\$2.65
To jobbers in less than carload lots.....	2.30	2.70
To retailers in carload lots.....	2.35	2.75
To retailers in less than carload lots.....	2.45	2.85

The above prices are for the base numbers, 6 to 9. The

other numbers of Plain and Galvanized Wire take the usual advances.

Plain Fence Wire Advances (Catch Weights).

Nos.	Base.....	Galvanized.....
6 to 9.....	\$0.40 extra	\$0.40 extra
10.....	\$0.05 advance over base.....	.40 "
11.....	.10 " " " .....	.40 "
12 and 12½.....	.15 " " " .....	.40 "
13.....	.25 " " " .....	.40 "
14.....	.35 " " " .....	.40 "
15.....	.45 " " " .....	.75 "
16.....	.55 " " " .....	.75 "
17.....	.70 " " "	1.00 "
18.....	.85 " " "	1.00 "

For even weight bundles, 50 pounds or over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—The country has never seen such an enormous consumption of all kinds of Wire. Galvanized Wire is in especially strong demand, and manufacturers and jobbers are in continual hot water in endeavoring to satisfy the requirements of the trade. An advance of 5 per cent. has been made in Bale Ties, and the prospects in this direction indicate that Bale Ties will very shortly get into the same condition as Barb Wire. Manufacturers are doing their utmost to supply the demand, which promises to be exceptionally heavy. Carload lots are still held at \$2.40, base, and small lots from stock at \$2.50, with an occasional shade to \$2.45.

Pittsburgh.—The volume of business in Plain Wire continues exceedingly heavy and shows no signs of abatement. Output of Wire at this time by the mills is the heaviest ever known, and it is being shipped as fast as made. In fact, the trade are having great difficulty in getting supplies of Wire as fast as wanted, all the mills being more or less behind in deliveries. For domestic trade we quote:

Plain.
To jobbers in carload lots.....
To jobbers in less than carload lots.....
To retailers in carload lots.....
To retailers in less than carload lots.....
Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Tarred Roofing and Building Papers.—The market for Tarred Roofing Papers has stiffened somewhat recently, owing more to the opening of the season for such material rather than to any understanding among manufacturers looking to a community of interests. The much lower prices now prevailing than were current some months ago, when the market was not an open one, is reported to have caused some of the smaller producers of coal tar products to seek a working arrangement for the raising of prices which the larger manufacturers profess to care little about. Tarred Single Ply Roofing Paper is now quoted at \$26 to \$27 a ton, while some orders have been taken at \$25 per ton. Two-ply Tarred Roofing, per roll of 100 square feet, is being sold at 50 cents per roll, and three-ply at 70 cents. Light, Medium and Heavy Weight Rosin Sized Sheathings are offered in fair lots at 35, 56 and 85 cents, respectively, per roll, the water proofed Sheathings according to quality ranging from 65 cents to \$1.25 per roll, with finer grades up to \$4 per roll. Deafening Felts, measuring 9, 6 and 4½ square feet to the pound, are offered at \$36 to \$37 per ton, as low as \$35 being made on good sized orders.

Rivets.—At a meeting of the manufacturers, held on the 24th ult., an advance was made in the price of Iron Rivets, the base discount being put at 70 per cent. The market has a firm tone and the volume of business is large.

Miscellaneous Wire Nails.—Wire Brads, &c., are firmly held, and several advances have recently been made by the outside manufacturers of these goods.

Coal Hods.—As the result of recent conferences between the leading manufacturers of Coal Hods an agreement has been reached in regard to prices. The market in this line, in view of the condition of the raw material, the large demand and the agreement of the manufacturers, is characterized by exceptional firmness.

Horseshoes.—The market on Horseshoes continues steady, recently announced prices by the different manufacturers being in general quite firmly maintained. The base prices of the manufacturers who are acting in concert are unchanged, Iron Shoes being quoted at \$3.50 per keg and Steel Shoes at \$3.25 per keg, f.o.b. Pittsburgh, with the all rail tariff rate of freight to destination added. Less than carload lots are sold at the same base price, but with less than carload freight added. The extras which are in force are shown in the following table issued by the Rhode Island Perkins Horseshoe Company, Providence, R. I.:

Iron Horseshoes, Extra Light, Light, Medium, Heavy, Long Heel, Iron Countersunk and Snow Shoes, No. 2 and larger and Iron Mule Shoes, No. 1 and larger, base.
 Favorite Shoes, No. 2 and larger, 25 cents per keg advance over Iron Base.
 Tips, No. 2 and larger, 50 cents per keg advance over Iron Base.
 0 and 00 Mule Shoes, \$1.50 per keg advance over Iron Base.
 Jack Shoes, \$2.50 per keg advance over Iron Base.
 Calked Shoes, No. 2 and larger, 75 cents per keg advance over Iron Base.
 Calked Mule Shoes, No. 1 and larger, \$1.25 per keg advance over Iron Base.
 Goodenough Army and Heavy Shoes, No. 2 and larger, 50 cents per keg advance over Iron Base.
 Goodenough Winter Shoes, No. 2 and larger, \$1 per keg advance over Iron Base.
 Light Steel and Extra Light Steel Shoes, No. 2 and larger, and Steel Mule Shoes, No. 1 and larger, base.
 X. L. Steel Shoes, No. 2 and larger, 75 cents per keg advance over Steel Base.
 Thin Steel Countersunk Shoes, No. 2 and larger, \$1 per keg advance over Steel Base.
 Cowboy Shoes, No. 2 and larger, \$1.25 per keg advance over Steel Base.
 Plain Cowboy Shoes, No. 2 and larger, 75 cents per keg advance over Steel Base.

The price of Toe and Side Weight Shoes is as follows:
 Toe Weight Shoes, No. 2 and larger, \$5 per keg. Side Weight Shoes, No. 2 and larger, \$6.75 per keg. F.o.b. Pittsburgh, Pa., with carload all rail tariff rate of freight to destination added on any quantity.

All Horseshoes, No. 1 and smaller, 25 cents per keg extra. On Iron and Steel Mule Shoes an extra of 25 cents per keg will be charged in the following States and cities: West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, Louisiana, Texas, Louisville, Ky., and St. Louis, Mo.

Metallic Binding.—The Painesville Metallic Binding Company, Painesville, Ohio, in connection with their line of Round Hem Oil Cloth Binding issue the following price-list for 1901, which is subject to a discount to the retail trade of 80 per cent. on genuine Zinc Binding, and a discount of 75 per cent. on Brass Binding:

Zinc.	Brass.
4-4 per dozen sets....\$2.40	4-4 per dozen sets....\$3.60
5-4 per dozen sets.... 3.00	5-4 per dozen sets.... 4.50
6-4 per dozen sets.... 3.60	6-4 per dozen sets.... 5.40
8-4 per dozen sets.... 4.80	8-4 per dozen sets.... 7.20
Packed in boxes of one set each, and in shelf boxes of one dozen each.	

Revised List of Bright Chains.—Under date May 1, the Standard Chain Company, Pittsburgh, Pa., issue a revised price-list of Bright Chains, including Traces, Breast Chains, Cow Ties, &c. In this list, which will be given in full in our next issue, the various standards are somewhat simplified, the revision being made with the idea of securing more uniformity as between English sizes and Western standard sizes, the former being sold on list while the Western standard sizes are sold at net prices. In connection with the list the following explanations are given:

Western standard contains one link less per foot than indicated—namely, an eight-link Chain contains but seven links per foot and are made of the following sizes of iron:

No. 3	No. 2	No. 1	No. 0
7-32 inch	1/4 inch	9-32 inch	5-16 inch

English standards contains two links less per foot than indicated—namely, an eight-link Chain contains but

six links per foot and are made of the following sizes of iron:

No. 3	No. 2	No. 1	No. 0
7-32 inch	1/4 inch	9-32 inch	5-16 inch

Thus a 7-10-2 English standard would be 7 feet long, eight links per foot of 1/4-inch iron.

The revised list is, it will be observed, somewhat higher than the one it supersedes, and an advance has also been made in the discount. This advance is not surprising to the trade in view of the condition of the Iron market and the very large demand.

Axes.—Under the attractiveness of the low prices ruling for Axes there has been a large amount of business transacted and the requirements of the larger trade have been quite generally covered. The smaller manufacturers in this line have, as a general thing, been holding aloof, anticipating that existing prices will sooner or later be withdrawn, and they will then have an opportunity of securing business at somewhat higher prices. In view of the large volume of business which the leading makers have secured it is thought not unlikely that their quotations will soon be advanced. However this may be, the market is sure to feel the effect during the season of the large quantity of low priced goods which have been sold.

Cordage.—During the past two weeks the demand for Rope has not been quite so active as heretofore. The cause of the decline in demand is not clearly understood, as it is estimated that stocks throughout the country are not large. While Hemp values have stiffened the Rope market has not gained corresponding strength, possibly because manufacturers are desirous of selling their output. Manufacturers' quotations are as follows: Manila, 10 1/2 cents per pound; Sisal, 8 cents per pound, both on the basis of 7-16-inch and larger, with a rebate of 1/4 cent for large lots. Some makers are quoting still 1/4 cent lower on carload lots.

Binder Twine.—Conditions in the Binder Twine market are about the same as at our last report. The Eastern demand is not excessive, being confined, for the most part, to small lots. General quotations, with a rebate of 1/4 cent in carload lots, f.o.b. Eastern factories, are as follows:

White Sisal, 500 feet per pound.....	8 1/4c.
Standard, 500 feet per pound.....	8 1/4c.
Manila, 600 feet per pound.....	10 to 10 1/4c.
Pure Manila, 650 feet per pound.....	11 1/4c.

Some makers are quoting 1/4 cent less than the above prices on Sisal and Standard.

Glass.—It is expected that the Wage Committee will soon meet representatives of the American Window Glass Company to settle the wages for the fire of 1901-02. A similar conference between the Wage Committee and representatives of the Independent Glass Company is expected to follow soon. Co-operative firms of Glass manufacturers held a meeting for the purpose of forming an association, which will contemplate, it is understood, a sales and purchasing agency. Another meeting will be held to perfect arrangements. It is expected that the majority of Glass factories will close down on May 11. There is a report in circulation that on or soon after that date another advance in the price of Glass will be made.

Paints and Colors.—**Leads.**—The decidedly unpleasant weather has had an unsettling effect upon the White Lead in Oil market. There are reports of irregularities in price amounting to 1/4 cent per pound. It is anticipated that when conditions become favorable for out-of-door work the market will become firmer. Quotations are as follows: In lots of 500 pounds and over, 6 1/2 cents per pound; in lots of less than 500 pounds, 7 cents per pound.

Oils.—**Linseed Oil.**—The market in Linseed Oil has a firmer tone. Sales for April-June delivery of State Oil have been made at 59 cents for carload lots. Crushers are now asking higher prices in some cases. Large consumers have been buying sparingly, and the season is approaching when Oil will be in more active demand. Last week the Chicago price of Raw Oil was advanced 2 cents, to 58 cents in carloads. City Raw is quoted

from 61 to 62 cents per gallon, according to quantity. State and Western brands are quoted, according to quantity, from 59 to 61 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—During the latter part of the week past Turpentine advanced in price in the local market under the stimulating effect of active demand in the South. Subsequent absence of large buying has caused a decline at Southern points, and local values have fallen off in sympathy. Demand here is moderate at the following quotations, which are, according to quantity: Southerns, 35 to 35½ cents; machine made barrels, 35½ to 36 cents per gallon.

PRICES ON CUT NAILS TO THE RETAIL TRADE.

WE are in receipt of the following communication from a prominent New York house, which we take pleasure in referring to the trade:

We quote from your Notes on Prices in *The Iron Age* of April 18—viz.:

Some time ago the manufacturers' policy was to charge retailers a higher price for carloads of Cut Nails than they did the jobbers. This distinction has been gradually abandoned and prices are now practically the same for both branches of the trade.

This is quite true as far as New York and vicinity is concerned, but we would like to inquire through *The Iron Age* if this strange state of affairs holds good elsewhere. If so, it is the only instance we know of where a trust, combination or association has completely ignored the wholesale trade, and it would be interesting to know what the jobbers of the country think of the gentlemen composing the Cut Nail Association, who must be held responsible for this unsatisfactory position of the wholesale dealer.

NAILS.

EXPORT NOTES.

Flint, Eddy & American Trading Company, 30 Broad street, New York, exporters and importers, have just moved from the Johnston Building at the above address, where their offices were distributed through five floors, to the immense Broad-Exchange Building opposite, just nearing completion, where they have all of the nineteenth and a half of the eighteenth floors. This gives them 28,000 square feet of floor space, simply for clerical purposes, the company having a separate warehouse on Broad street, for receiving, packing, shipping and storage of merchandise not sent directly to a wharf or ship by the manufacturer.

N. Joachimson, Hamburg, Germany, has just established an American branch at 33-37 South William street, New York. This well-known German house was established in the early part of the last century, and does an extensive trade with China, Japan, British and Dutch East Indies and South Africa; in a general line of merchandise, prominent in which are such staples as Wire, Wire Nails, Hardware, Machinery, glassware, cotton and dry goods, lard, flour, tobacco, &c. The business of this house originally was the importation of staples in foodstuffs, &c., for the European market, but for a score of years or so they have also been exporting merchandise of a miscellaneous character to the important markets referred to above.

John G. Rollins & Co., Old Swan Wharf, London, England, whose New York branch in charge of E. A. Booth, is at 2-4 Stone street, have recently taken the sole agency of the Anderson Pipe Coupling and Pliers made by the Anderson Coupling Company, Portland, Conn., for the territory of Great Britain and Ireland, France, Holland, Belgium and Switzerland. This is a device for making water tight joints in connection with lead pipe, either lead to lead or lead to iron pipe, &c., by unskilled

people instead of wiped lead joints such as a journeyman plumber would make.

Australia is referred to by those having large interests there as being in a healthy condition, but unfortunately high prices in the United States have temporarily curtailed exports from here in heavy lines, such as Boiler and Ship Plates, Hoop Iron, Mild Steel Bars, &c. English manufacturers are now beating us in the production of Iron Bolts and Nuts, while in Nails and Wire, especially Wire, the Germans are getting a large part. In the smaller sizes of Bolts England secures many orders, while larger sizes are now bought mainly in Germany. The question as to the policy to be pursued in regard to tariff is one of engrossing interest, and in view of the conflicting views it is difficult to forecast the result.

S. Hoffnung & Co., London, England, with great branch houses in Melbourne, Sydney and Brisbane, Australia, and a house at 33-37 South William street, New York, of which Otto Lion is manager, are intending to go largely into the China, Japan, British and Dutch East Indies and South Africa trade, exporting to the countries named American manufactured merchandise, as they have long done to the Australian colonies of Queensland, New South Wales and Victoria, where they have warehouses and carry large stocks. This long established concern were organized as a stock company a year or so ago, for business reasons, the proprietors, however, retaining the stock instead of marketing any of it.

THE PROPOSED CONSOLIDATION OF SHOVEL INTERESTS.

THE manufacturers of Shovels and Spades, whose association has been in such complete control of the market for several years, have, as many in the trade are aware, for some time been working on a plan to secure a permanent consolidation of their interests, perhaps under the name of the Ames Shovel & Tool Company, which has been suggested. It is understood that options have been obtained on about 95 per cent. of the Shovel capacity and appraisers have nearly completed their work. Some regard the arrangement as likely to go through, but others closely identified with the movement refer to difficulties encountered which will probably defer, if they do not defeat, the execution of the project. Meanwhile the association is maintaining prices firmly and does not find the competition of outside concerns formidable, but views with some apprehension the fact that new concerns are continually proposing to enter the field.

M. OHMER'S SONS COMPANY.

THE M. OHMER'S SONS COMPANY, Dayton, Ohio, and 73 Nassau street, New York, have just issued an illustrated catalogue of special Bank, Office and Court House Furniture, and Filing Devices for conveniently placing legal and similar documents of record. Regularly the cabinets are made in oak, although cherry, walnut and mahogany fittings can be supplied to order. These cabinets are especially suitable for insurance companies, railroads, attorneys, tariff clerks, banks, real estate men, Government buildings, and for almost all commercial and professional purposes.

GURNEY REFRIGERATOR COMPANY's plant at Fond du Lac, Wis., was entirely destroyed by fire on Saturday, 27th ult. The company's well stocked warehouse, with a complete line of goods, was fortunately saved from destruction. They also have warehouse stocks in eight of the principal cities, thus enabling them to make prompt shipments on orders. The company advise us that they will be in the market for next season's business as usual.

J. R. Dean & Co. have purchased the Hardware business of F. W. Kidd at South Lawrence, Mass.

SHOW WINDOW DISPLAY.

This Department is to give information in regard to the use which may advantageously be made of show windows of Hardware stores, with practical suggestions in regard to the arrangement and display of goods and other methods of attracting business.

The trade are invited to contribute information in regard to methods which have proved satisfactory, with descriptions of attractive displays. Inquiries also are solicited, to which careful attention will be given.

A BOILING TEA KETTLE.

From the front of a store in the Hudson Valley hangs a gigantic Tea Kettle with a capacity of 60 gallons, from the mouth of which steam is constantly pouring. This Kettle and its position is shown in Fig. 1.

The Tea Kettle attracts much attention from passers



Fig. 1.—The Boiling Tea Kettle.

by and causes much comment. It forms a comparatively inexpensive and economical advertisement, which cannot fail but make an impression on any one seeing it.

The Kettle is constructed of galvanized iron and is painted to represent dull copper. It is held in position by an iron bracket, and is strongly braced.

The steam which is exhausted from the Tea Kettle

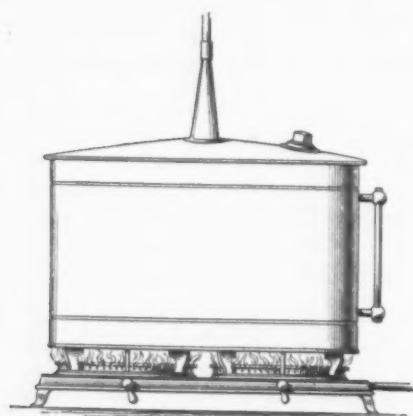


Fig. 2.—Home Made Boiler that Generates the Steam.

is generated in a boiler placed in the basement under the front door. This is shown in Fig. 2. As will be seen, the boiler is a home made affair and can be constructed in any shop. An ordinary wash boiler is placed

on a gas stove, which is connected to a special gas meter, so that the exact cost of operating it can be determined. On one side of the boiler is fastened a water gauge glass, so that the height of water in the boiler may be determined at a glance. This is not by any means a necessity, as a little experimenting will determine how long a given amount of water placed in the boiler will last. The top of the boiler is soldered to the boiler. In the top of the boiler, where the handle is generally soldered on, is cut a circular hole in which is soldered a tin cone, serving as a steam dome. This reduces and is soldered into a union into which is screwed the 1-inch iron pipe carrying the steam to the Kettle. In the top of the boiler, about half way between the cone and the end, near one of the handles of the boiler, is soldered a reinforcing plate, into which is screwed a 1-inch plug. Through this hole the water is poured into the boiler.

The situation of the Tea Kettle, the boiler and the pipe connecting them is shown in Fig. 3. It has been

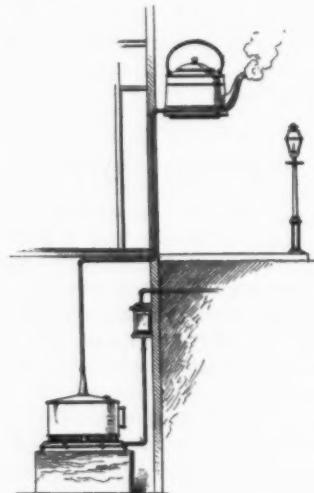


Fig. 3.—Section Showing Situation of Boiler, Tea Kettle and Piping.

found by experiment that a larger amount of steam is emitted from the Tea Kettle when the 1-inch plug is not screwed into the reinforcing plate than when pressure of the steam is alone relied upon to force the steam through the pipe. People who have watched the operation of the boiler have offered different theories as to the reason of this, but have come to no agreement as to the cause, although they all agree that this is the case.

Careful track of the amount of gas consumed, the price being \$1.10 per 1000 feet, has shown that it costs about 10 cents a day to keep a nice amount of steam escaping from the Tea Kettle from morning until night. On rainy or very cloudy days the boiler is not operated, as the steam does not then attract much attention. The efficiency of the boiler could doubtless be materially increased if it were inclosed, so that less heat would escape.

Where waste steam is available, the exhaust pipe could be connected directly with the Tea Kettle, and it would be operated at no cost at all.

WINDOW DISPLAYS ARE PROFITABLE.

Opinions from many representative merchants on the value of show window displays indicate that the Hardwareman is beginning to appreciate the worth of his windows as an advertising medium. Some of the letters received contain suggestions that should be of interest, and we make the following extracts:

From a Large Connecticut House :

We admire a well trimmed window in a Hardware store more than in any other line, and believe that goods shown up in windows will increase the volume of sales. The Hardware store of to-day should have a wide salesroom in front, as a large part of our profits is in such small Hardware as people buy "because they happen to see it," and the more show counters and show windows one has, the more can be done in this line. As these sales are nearly all cash, they pay. Novelties and small handy articles do not sell if hid away on the shelves or under the counters.

Best Advertising Medium, Say Colorado Firm :

We regard our window display as our very best advertising medium. We think the season is the vital point in this class of advertising. Wire Cloth and Screen Doors in January would be no more seductive to the inlooker than Skates in July.

Bring Increased Sales to Large Connecticut House :

We have made it a point for several years to look carefully after our windows, and think by frequent cleaning and frequent changing of the goods in the windows they bring us an increase of sales for our goods. It is a very frequent thing with us to have customers come in and tell us that they saw such and such a thing in our windows and want them.

Important Advertising Medium, Says Michigan Retailer :

We have large deep windows, and we consider them a very important part of our advertising and in introducing new goods and making special sales.

They Bring Direct Results to Massachusetts Merchant :

We consider the window the best advertising medium we have, as it shows direct from the street to the store, while the newspaper is indirect and only determined by supposition.

Our Most Valuable Medium, Says Iowa Retailer :

We consider our show windows our most valuable advertising medium. From a display increased sales are immediate and considerable.

Connecticut Hardwareman Writes Windows Sell Goods :

We are convinced that good window displays sell goods and help the reputation of a store, but it requires considerable originality, industry and taste as well as time to make it a complete success.

Virginia Retailer Says Windows Attract Trade :

We have people come in and buy something from the show window that has attracted them. The better the display, the better the result.

Increase Business, Writes a Massachusetts Merchant :

Window displays increase business. We make many sales which can be traced directly to goods in our windows.

A Large North Carolina House Write :

Increased sales of articles in windows is undoubtedly. If properly made they are the very best advertisements.

Best Method of Advertising, Say Large Connecticut Firm :

We are great admirers of window advertising, and have proved that it is the best method of advertising we have. It can be made valuable only by frequent changes.

All Agree that Window Displays Pay :

The following brief extracts from letters from merchants in different parts of the country show how general is the opinion that show windows are one of the best advertising mediums at the command of the retail Hardwareman:

From an Illinois house comes this experience: "There is no doubt but that window displays increase sales."

* * *

A Massachusetts Hardwareman says: "We think good show windows, well arranged, are one of the best advertisements a merchant can have."

A large Massachusetts house write: "We are firm believers in the utility of good window displays, and devote much attention to them."

* * *

A dealer in Pennsylvania says: "We can trace increased sales to window displays if they are made in the proper way."

* * *

From Minnesota we are told: "People come in and ask for articles seen in window display."

* * *

A Pennsylvania merchant writes: "I notice my sales always increase on goods after they have been placed in the windows."

* * *

A progressive Iowa merchant says: "We change our newspaper advertisement every week, but consider the windows of more influence than the paper."

* * *

A Minnesota dealer writes: "We consider our window a good salesman."

* * *

An Arkansas firm say: "We certainly have increased our sales by window displays."

* * *

To the question, "Can you trace increased sales to window displays?" a Minnesota hustler tersely replies: "Yes, indeed."

* * *

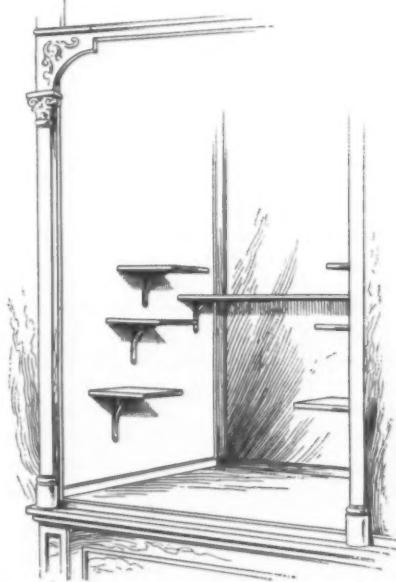
A South Dakota merchant replies to the same question: "I am sure I can."

* * *

A concern doing a wholesale and retail Hardware business in a small Western New York city answers the query with simply: "Decidedly, yes."

UNIQUE ARRANGEMENT OF WINDOW SHELVES.

A unique arrangement of shelves in a window is shown in the accompanying illustration, which is copied from a window of one of the largest dealers in the



Unique Arrangement of Window Shelves.

eastern part of New York State. The window, as can be seen, is a very high one, and has a broad shelf running across the back of the window inclosure about half way from the floor to the ceiling.

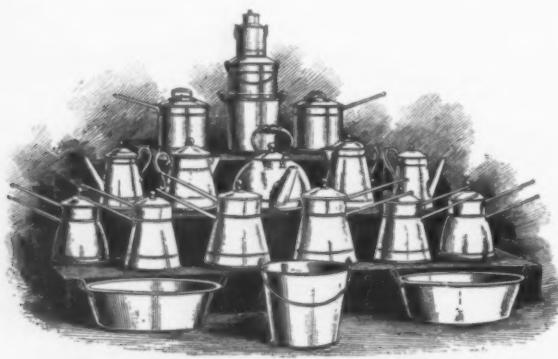
On each of the side walls of the window are three square shelves fastened by ordinary brackets. It will be noticed that each shelf is stepped a little back of the one below it. This offers an exceptional opportunity to display goods. One advantage possessed by the high shelf in the back of the window is that it is well adapted for displaying large and distinct goods, and that things on it can readily be seen from across the street.

Many modifications of the arrangement as shown can be made that may be better adapted to the special

needs of each individual store, and which, if used, will make a pleasant change from the conventional displays on the floor of the window as made by many Hardware men.

PACKING BOXES IN WINDOW DISPLAY.

The packing box is sometimes called into service in the show window to make steps or stands on which to display goods. The accompanying illustration shows an exhibit of Bright Tinware made in a store in Eastern New York. The steps on which the goods are displayed are made of packing boxes piled on top of one another. These are covered with black cloth, which makes a sharp



Display of Tinware on Steps Made of Packing Boxes Covered with Black Cloth.

contrast with the Bright Tinware, showing it off to the best advantage.

Merchants who have experimented with packing boxes in their windows refer to them as convenient and cheap fixtures and permitting a good deal of variety in display of merchandise.

MONONGAHELA VALLEY RETAIL HARDWARE ASSOCIATION.

RECOGNIZING the fact that it is only by means of concentrated effort that merchants can correct or mitigate the evils which nowadays beset the conduct of the retail Hardware business, a number of the Hardware men of Western Pennsylvania have formed an association for the protection of their interests under the name of the Monongahela Valley Retail Hardware Association. This association is the outcome of a meeting held in Charleroi on January 31 last, when the five merchants of that city, after considering the matter, prepared the circular letter given below in which the evils threatening the trade were set forth. This circular, which was sent out under date of February 16, was as follows:

The conditions confronting the retail Hardware dealer in Western Pennsylvania are viewed with alarm. Our trade is on the brink of demoralization and ruin.

Department stores, racket stores and catalogue houses are invading our territory, and by tricks peculiar to their systems are diverting our trade from its proper and legitimate channels.

Furniture stores handle Stoves and Ranges at cost in order to get their own goods upon the market. Grocery stores are cutting into our trade. Jobbers sell to our customers at prices they sell to us.

We, as individuals, against all these forces are helpless. By organizing we can have it in our power to materially change these conditions and bring about reforms that will be of great mutual benefit.

We think it time to call a halt, and with this thought before us a meeting was held at which plans were discussed for calling together all Hardware dealers of this valley, to take some action looking toward a permanent organization.

We therefore respectfully ask you to call all Hardware men in your city together and form a similar organization to co-operate with us, with the ultimate purpose of building up a State association, whose influence will reach all over the State. Such an organization as our sister States have in successful operation.

Kindly report result soon as possible, that the work may be pushed rapidly.

J. H. BOWERS,
A. P. BUCKHOLDT,
POELLOT & ROBINSON,
CHARLEROI SUPPLY COMPANY,
SHANTON & FRYE.

J. F. FRYE, Secretary.

The above letter was mailed to all Hardware dealers in the valley, from whom exceedingly encouraging responses were received in nearly every instance. Thinking the time ripe for further action, a second notice was sent out calling a meeting at Charleroi on March 26. This meeting was attended by representatives of 13 firms, and was notable for the interest and enthusiasm which prevailed. A permanent organization was then formed under the style above given.

A third meeting was held on April 9, at which constitution and by-laws reported by a previously appointed committee were adopted. At this meeting a number of new names were added to the roll of membership.

The following are the officers of the new association: President, Geo. L. Moore, Brownsville.

Vice-President, J. P. SLATTERBECK, Fayette City.

Secretary, J. F. FRYE, Charleroi.

Executive Committee: T. S. McCurdy, Monongahela; H. T. Robinson, Charleroi; C. N. Savage, California; W. S. Spragg, Donora; O. B. Willson, Belle Vernon.

All of the meetings, we are advised, were characterized by intense enthusiasm and keen interest, and the association is regarded as having been launched under very favorable auspices. The hope is expressed that its influence will be felt in the near future all over the State, thus perhaps leading to similar action on the part of retail merchants in other sections of Pennsylvania.

Another meeting will be held at Brownsville on May 14. In connection with the efforts which the association are making to secure the membership of every retail

Five Good Reasons Why You Should Join Us.

1. If the Range peddlers have ever sold goods to your customers.
2. If you want the co-operation of every Hardware dealer in the State against Montgomery Ward & Co. and other houses of the same class.
3. If you wish to prevent the large jobbing houses of the country from selling Hardware to racket stores, department stores and grocery stores.
4. If you want to avoid the cutthroat competition from your neighboring Hardware store.
5. If you want to keep abreast of the times and get the wide-awake ideas of the other dealers of the State.

Hardware house in the territory covered by it, they are sending out the card reproduced herewith, in which the reasons for affiliating with the association are tersely given.

ARCADE MFG. COMPANY.

ARCADE MFG. COMPANY, Freeport, Ill., have just issued a catalogue of Hardware specialties which is easily the largest thus far issued by the company, comprising 144 pages. It includes not only the regular goods on which the company built up their reputation, but new lines which have recently been added by the purchase of the business of other manufacturers. Their products are of an exceedingly varied character, the index enumerating them requiring four pages of the catalogue. They consist of Coffee Mills and other kitchen necessaries, Screen Door Hinges, Door Bells, toys and novelties. Decatur, Bull & Co., Montreal, are their sole Canadian representatives.

BUSINESS IN MICHIGAN.

FOR the following advices in regard to the condition of trade in the State of Michigan and the promising outlook we are indebted to Morley Brothers of Saginaw:

April business has been in harmony with the weather—a few sunny days would cause a correspondingly bright business, the rain would come, sometimes snow, and a great many cold, gloomy days that would give a chill to the trade. But, taken all in all, a satisfactory business can be recorded. Early in the month stocks of Barb Wire and Wire Fencing were depleted, and up to date it has been impossible to take care of our trade on this commodity. Sales of Wheelbarrows, Shovels, Spades and like goods have been larger than for several years. Builders' Hardware has been below normal, while other lines of Shelf goods have been in good demand. Our harness factory is running with full force of help, yet are unable to keep up with the orders.

The general outlook throughout the State is very bright. A good amount of building is in sight, factories in all locations are running overtime; in fact, all indications point to one of the most prosperous years that Michigan has had for some time.

The whole world knows of our copper and iron mines, and the great steel trust must come to us for its material. Coal of good quality, and easily mined, is to be had for the digging. A good quality of cement is being manufactured in this State, and, with our Legislature working and talking for good roads, but a short time will elapse before the approaches to our cities and towns will be of cement. Why shouldn't we be optimistic? These great industries mean increased business to the jobbing Hardware trade, and good highways and electric roads will place us in closer touch with our retail customers.

F. E. MYERS & BRO.

F. E. MYERS & BRO., Ashland, Ohio, issue a circular under date of April 20, in which they announce that in view of orders booked, good trade conditions generally and the uncertainty of securing raw material, they have withdrawn part of their traveling force. They refer to trade as never better or more general. Accompanying the circular are pamphlets relating to Myers' Spray Pumps, Hay Carriers and Tools, Power Pumps, Force, Lift and Tank Pumps, &c.

R. D. CONE COMPANY'S NEW CATALOGUE.

R. D. CONE COMPANY, Winona, Minn., have just issued a fine illustrated and descriptive catalogue of Builders' Hardware dealt in by them, containing 320 pages, each 11½ x 9 inches, and cloth bound. In it are shown assortments of Hardware used in the erection and trimming of buildings. This book is the forerunner of a general catalogue of Hardware in various forms now in press. Attention is drawn to their arrangement of special design Hardware, pains having been taken to present this subject in simple and comprehensive form.

TRADE ITEMS.

C. E. JENNINGS & Co., 101 Reade street, New York, are making a specialty for the summer trade of Chandler's Ice Cutting Machines, made by them in sizes 1, 2, 2½ and 3, listing respectively, \$3.50, \$5, \$8 and \$20 each. This is a comparatively small and compact machine at a moderate price, for the preparation of iced drinks, the various sizes making it suitable for soda counters, family use, hotels, confectioners, hospitals and other institutions.

THE BAYLIS COMPANY, who manufacture Hardware specialties, particularly Gas and Electrical Appliances, removed on May 1 from 99 Cedar street to 140 Washington street, New York City.

THE LAWTON CUTLERY COMPANY have removed from 132 East Lake street, Chicago, to larger and more desirable quarters in the Dickey Building, Lake and Dearborn streets.

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The Hardware Store in May.

In the following columns we consider the work which belongs to May, the various articles embodying suggestions as to the use to which the month may advantageously be put. Advices from the trade are invited, supplementing the information given as to May work and indicating other opportunities and methods which belong to it.

WHAT TO DO IN MAY.

BY H. C. W.

WHAT isn't there to do in May? Sell goods for all you're worth, every man in the house! The time is at hand, the goods are at hand, the opportunity offers, and with any sort of weather May is one of the great selling months of the year and invariably shows results if any previous work has been done in preparation. While the seasons in a manner control everything, there are months in the year in which so much will be done no matter what the odds be against us—and May is one of them.

The Show Window and the Advertising

should be brought and be kept closer together during the month. A priced and sampled window of Hammocks should be recognized immediately by our patrons, on taking up their daily papers—to that extent that it will not be forgotten for a moment on passing your window that they were priced just as shown, 59, 69, 74, 89, 99 cents, \$1.24, \$1.49, \$1.74 and \$2.24. It is a pleasure to a customer to make the comparison—he is saved the asking of numberless questions, the time lost in looking over the goods, and while we are not always aware of it, the sale is very frequently made then and there, and having selected it, he will drop in within a day or two—and all at no trouble or expense to you or your salesman beyond the wrapping up and asking him to call again.

An Eight-Room House Trim,

all in one finish or design, makes a capital corner of the show window at this time. Everybody is right in the hight of building or getting ready to. The average layman does not know a thing about finish or cost. He wants to know, and the putting his eyes on just what will trim his house means much to him and much to you when he is ready for it. Give it a number, so that when taken out it can be readily recalled again by both, and give it a number in your ad. of "Cost of Bronze Trim for an Eight Room House," pricing it there and pricing it always. It is the price he wants as much as the goods when it comes to making up his estimate. Follow with

Paint for an Eight-Room House.

Oils and White Leads do not make a show, but Paste or Mixed Goods, Dry and Box Colors, do—so do Varnishes and finishes. And a card, 18 x 36 inches, on an easel, with the cost nicely estimated, serves the purpose—at least well enough for the customer to copy and carry away for estimates. Let your ad. be a copy of the card, and one will recall the other. They are pleased. They get the idea the work is done for them, and they will not forget you when ready to use the material. An eight-room house makes a good standard for these estimates, and it is surprising the results they bring.

May for Garden Tools.

It's the big month, and it's nearly all done in later April and the month of May. Like everything else, they have to be shown, and they are worthy of the ads. that should be given them. It is yet possible to make a "Three-Piece for \$1" set by bunching a cheap Hoe, a Spade and a cheap malleable Rake, and lots of them are sold. So, too, with the same set—only a Spadling Fork in place of a Spade, and with them all the Weeding Forks, the Spadling Trowels, the Spuds for dandelions, the Edging Tools, the Hand Shears for trimming and edging, the Grass Hooks of all kinds, and the thousand and one things that every one is waiting and watching for in garden and flower bed work.

Lawn Swings and Lawn Chairs

begin to move in May. It is a good time to have a sample in the window, a sample on the pavement, and a cut in the daily papers—prices named in each case. The Lawn Swing trade has been of wonderful growth.

Carloads are now sold where half dozens were at one time the rule, and fair profits are still left for the work put on them. To avoid competition it is a good idea to select a line your competitor does not handle, or have them built with the firm name only on them. It is then nobody's swing but your own, and the price largely yours.

Garden Barrows and Lawn Rakes

must be gotten ready and cuts are a great aid with these as with other lines of goods. And do not forget the Spray Pumps just now, as the bloom begins to come on. They cannot be used too early, and their use is growing every season and should continue to grow. There's a line of goods that, with clever advertising, good cuts and proper attention, will bring in as great results as any other lines in your store—namely, the Garden Barrow, Lawn Rakes, Spray Pumps (including the cheap ones, the good ones, the Knapsack and the Barrel Pump), the Spraying Material (Paris Green, London Purple, &c.), and none of it can you afford to neglect for a moment.

The Small Plants

follow as a very natural thing—Cabbage, Tomato, Sweet Potato, &c., every box of them bringing a clear 100 per cent. profit. Even when sold by the full box of 100 they will do this, if bought right, and the plants are good and strong. Merchants of our city, in the short time allowed, sell as many as 10,000 of these small plants to each store selling them. Then come the larger or potted plants, which bring even a better profit, while not so many are sold, of course. All of this goes with the

Bulk Seed,

which should now be moving in great shape, and no trade is so satisfactory or so profitable when handled rightly. It has come to be one of the season staples among Hardware men, and well deserves the place. The sale of the goods extends, too, throughout several months. It is not short lived, and gives work to people in the store who are not fitted for everything else. It fits in, too, with so many other classes of goods—it brings with it inquiries for lines you do not keep but can easily get, and with profit.

Sporting Goods

come as nearly with May as with any other month, and to those who handle them there is always the feeling of an assured profit to come. There is no end to it when it comes to Fishing Tackle and the thousand and one things belonging to it (Poles, Reels, Nets, Buckets, Hooks, Lines, Sinkers, &c.). Then the endless variety of Baseballs, Bats, Gloves, Mitts, Muzzles, Masks, &c., all start out in May. And with them the Striking Bags, Indian Clubs, Footballs, Tennis Goods, and last, but not least, the Golf Outfits, any and all of which can be, and are being, made very expensive and profitable.

The Binder Twine Customers

must be looked up in May. It is then known if we are to have a crop or not, and old customers must be seen and new ones looked up. Personal letters should go to every man who has been on the books in other years, and personal letters should go to every tax paying farmer in the county, not only for the Binder Twine, but for Haying Tools, Barn Trimmings, House Paints, Barb and Smooth Fence Wire, &c., and at the same time the weekly and country newspapers well used in advertising along the same lines.

May is a Month of Selling

and of great possibilities—a month in which every man in the house can readily find more work than he can do—one of those months when, if not careful and because

things seem to be coming our way, we are liable to neglect the old accounts that always want attention—neglect our advertising, that ought never be neglected, and get just a wee bit careless in all things.

MAY WORK IN THE HARDWARE STORE.

BY PENNSYLVANIA.

IF the earlier months of the year have been months of sowing, May will be the month of reaping.

Store Cleaning.

May is the month for house cleaning. A display of House Cleaning Tools will be better appreciated if shown in a clean store. Several evenings may be devoted to freshening up the store with damp cloths for shelves, worn places brightened with paint and varnish and all bright goods overhauled and polished. During the winter the wall paper on the ceiling or exposed places on side walls may have become blackened with dirt. So gradually has it accumulated that it is, perhaps, only when the sunshine floods the store that you notice it. Now is the time to advertise Wall Paper Cleaner. Leave a square on the wall or ceiling uncleaned, with the words in large letters, as shown, made by using a piece of the Cleaner as a brush. If possible have the paper cleaned in the day time, a little at a time, and stretch the job to last as long as possible. Nothing convinces a doubtful customer quicker than to see just what your goods will do. Their "I'll take one can of Cleaner to see if it is as good as you say" becomes "If it cleans like that I'll take two cans."

**RUB - HER - NEK
CLEANER**

15c.

Leave a square on the wall or ceiling uncleaned, with the words in large letters, as shown, made by using a piece of the Cleaner as a brush. If possible have the paper cleaned in the day time, a little at a time, and stretch the job to last as long as possible. Nothing convinces a doubtful customer quicker than to see just what your goods will do. Their "I'll take one can of Cleaner to see if it is as good as you say" becomes "If it cleans like that I'll take two cans."

Get Rid of Left Overs.

The April rain of inquiries brings the May flowers of sales of Freezers, Lawn Mowers, Hot Plates, Oil and Gasoline Cooking Stoves, Ice Chests and Refrigerators. It is presumed the hammer of price reduction has left little or none of last season's line carried over. If, in spite of all efforts, some odd Mowers or other goods from last year are on hand, now is the time to overhaul them, clean and repaint scarred places, then put them to the front. It is a pleasure to the Hardwareman to show his best goods first. This inclination should be curbed for the time being until the left over ones are sold.

An Illustration.

A Hardwareman being shown through a large plant devoted to the manufacture of Electrical Appliances had his attention directed to a room partitioned from the main shop, where workmen were experimenting with an arc light, which, even to the inexpert, indicated superior qualities. He remarked that this was evidently the best seller of any of the many styles made. "Not at all," replied his conductor. "It is undoubtedly the best Lamp made, but the ones we have are equal, if not superior, to any of our competitors, and we are keeping this one back until they come out with a new Lamp—then we'll spring this one on them."

Have Clean Displays.

Sell first samples, particularly goods on pavement—Step Ladders, Wagons and all goods which become dusty and unattractive. Freshness is appreciated as much on the pavement as in the window display. The old Step Ladder, worn and dirty, had better not be displayed at all than to be shown as a sample of stock inside. If old goods are displayed, put on them a price card with price low enough to explain their appearance.

Carbon-Oiled Cloths.

Keep carbon-oiled cloths in a can for use in polishing varnished and painted goods, whether made of wood or iron. Refrigerators, Lawn Mowers and Stoves rubbed with these cloths are twice as attractive.

Rubber Stamp Advertising.

Enlarge the space by the wrapping table to hold small circulars of seasonable goods, furnished by the manu-

facturers. Nearly all have a blank space, "For sale by —," which may be filled in with a rubber stamp and placed in articles before being wrapped. Perhaps more goods leave your store in May than in any other month. The opportunity should not be missed of using this method of distributing your advertising matter.

Work Your Specialty.

Nearly every Hardwareman is attracted strongly, for some reason or another, to some particular feature of his business. It may be Builders' Hardware, Electrical Sundries or Bicycle Supplies. Whatever the specialty, it should be the province of the rubber stamp and all printed matter to make prominent his choice.

House Cleaning Window.

Gather all the Cleaning Tools you can think of for a display of house cleaning necessities. Interest may be drawn to this window by placing in it a figure made to represent a house cleaner. A wooden box of suitable size is used for the body, with two pieces of heavier wood to make each leg. Cover the legs with a pair of overalls and tack on Sponges to round out and cover completely legs and body. Scrub Brushes represent the feet. To the box making the body of the figure pieces of board are nailed and covered with Sponges, Brushes and Clothes Lines, Tack Claws, papers of Tacks and Tack Hammers. A Carpet Beater is fastened to one arm extremity; a pole with Window Brush on end fastened to the other. Small Tapes in bright nickel cases form the eyes, a large Sponge being the head. The figure may be made to remain upright by making a support of Carpet Beaters.

Dispenser or Recipient?

No month's results are satisfactory unless the plans have been formed in advance. There come occasions which appear not to be fittingly observed unless much money is spent. Some of these occasions are local, some extend over the entire country. The question to be decided is, Am I to be a dispenser or a recipient of cash on such occasions? If a dispenser, the store is closed and the day observed by handing over my money to those who are providing the necessities for the celebration. If a recipient, long before the day, plans are formed to draw the floating dollars tillward. We ask ourselves a question or two: Is there anything going on this month that will draw a crowd to town? Will it be a buying or a sight seeing crowd? And plans formed as the decision warrants. For the farmers 8d and 20d Nails are tied up in 5 and 10 pound packages for quick distribution. The nature of the occasion is studied and goods likely to be in demand are ordered now, not forgetting the circulars, which are placed so they may be carried home and read when all is over.

For the Proprietor.

A thought to be kept to the front during the month is how to take care of the trade properly. The clerks' interest may be developed by starting a good natured rivalry among them by offering a cash prize, or a day off, to the one making the largest day's sales during the month. The proprietor may show the clerks how to take care of a number of customers without appearing to neglect any. Nothing is more aggravating, after standing around 10 or 15 minutes and then determining to leave, than to have the proprietor call after you, "Did you get what you wanted?"

A Hint to Clerks.

Nothing hurts the reputation of a store so much as indifference on the part of clerks. The bright days bring many customers. They will return to the store where the clerks show a willingness to move. If a lady is selecting Paint, with others waiting, the color card, which has been arranged in a frame covered with glass, may be placed before her, and a move made toward waiting on the next by the simple question, "Something I may show you?" By using the many conveniences and schemes of displaying goods outlined in previous articles, one clerk, interested and on the move, can keep two or three customers occupied when each wants but one or two items.

FLY SCREEN DEPARTMENT.

BY A MERCHANT.

ONE of the profitable adjuncts to the Hardware store is the Screen department, plans for which have been formed as early as January, when the contract has been made for Doors, Windows and Wire Cloth, in quantities double that usually placed. The utmost care has been taken to have in stock by the middle of April a good variety of Spring Hinges, Door Pulls and Checks, Coil Springs, Screen Catches and Locks, Hooks and Eyes, Spring, Neck and Barn Bolts.

Selecting Workman.

During the winter months attention has been given to cultivating the acquaintance of carpenters, particularly those who are not tied down by contracts, but who are jobbing carpenters; and also to becoming familiar with the quality of their work, if quick, honest and reliable, possessing in a word the abilities requisite to their being intrusted with work in this department. Many of these men have shops at their homes, some have tools but no shops, and some are on our books and the account may be worked out.

Screen Shop.

One end of the warehouse has been cleaned out and a simple work bench placed, suitable for light work, where much of the repair work is done by our regular force. The boys are especially useful in recovering Screens, learning quickly how to stretch the Wire and paint the frames. We arrange with the carpenters at so much per hour, some who are regularly employed are glad to get the light overtime work for 20 cents; some 30 and some 35 cents per hour. We have the addresses of these men and arrange with them to reserve us part of their time.

Protecting Jobbing Customers

Some of the jobbing carpenters make a specialty of this kind of work and buy their supplies from us. In order to retain their trade we make an arrangement to divide with them a certain amount of Screen work, at the same time throwing in their way other jobs. We have found by experience that this class of work is left by the majority of the consumers until the files are thick, when orders come in with a rush and no one is willing to wait; then we find our jobbing scale particularly convenient. When such a division of work is made we get a 5 or 10 per cent. commission as the arrangement may define. The profit comes in where we can take care of our own contracts.

Securing Screen Work.

Early in the spring notices are sent out to householders announcing the department. On such announcements only such matter appears as relates to Screen work. An *Iron Age* advertising cut, showing a lady placing a Screen in a window, plays a prominent part in connection with cuts of doors obtained from the manufacturers.

Samples of Work.

When inquiries are made at the store regarding Screen work the person having the department in charge sees to it that samples of the different kinds of hand made and factory Screens and Doors are convenient to show, and in first-class condition. He, of course, is able to answer, without hesitation, questions as to price, when work can be started and finished. The proprietor sees to it that the utmost integrity is used in having these promises once made filled to the letter.

Some Conveniences.

On cloth covered boards are fastened the varieties of Screen Hardware. From the ceiling hang the different patterns of single and double Doors. Adjustable and hand made Screens are where they can be handled.

Small Screens for estimated work are prepared in paint and natural varnish finish. Many factory doors and windows when taken out of the crates show marks and scratches; these are wiped with a cloth dampened with linseed oil, which removes such blemishes.

Screen Rack.

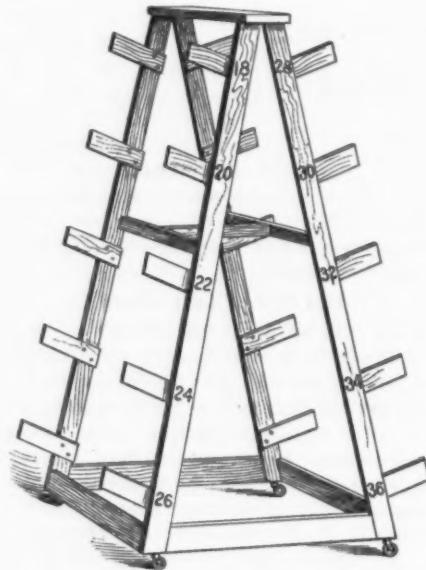
In the shop the Wire Cloth is kept on racks made by fastening arms to two pieces of studding. In the store the rack shown in the accompanying illustration is used, the Wire being measured and cut without taking rolls off the supports. The covered bottom allows two rolls to stand upright—40 to 48 inches—on each side of the center cross piece. A yardstick and pair of snips hang from hooks. This rack is placed in charge of one of the boys, whose duty it is to see that the yardstick and snips are kept in place, and that the rack is kept full of Wire. Being on ball bearing casters it is easily moved.

Additional Business

is brought to the store through this department. The Screen men have many questions put to them: "Do you put in Window Glass?" and "Where can I get Wire for porch vines?" are among the questions that result in the disposal of more goods.

Keeping Track of Orders.

An order book is used, into which is entered nothing but Screen business; an ordinary day book answers the purpose, after some additional ruling. Order slips are



Screen Wire Rack.

given the men when estimating, which they fill up with measurements, sign and hand in upon their return. These are filed and estimates sent applicant if order is secured. A copy of the order slip is made for working use and the original pasted in the order book. In case of misfit or any error the responsibility is easily placed.

Payment for Work.

To avoid delays in settlement for work care is taken to arrange the financial details at the time order is placed. References are carefully noted in the order book and terms of sale. On solicited work the desirability of the persons interested is ascertained before approaching them on the subject.

The Season.

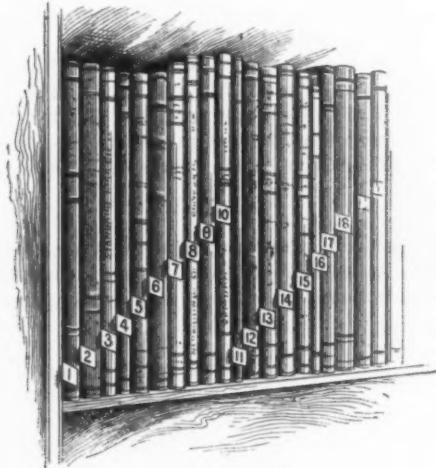
There will be Screen business all summer, the rush coming with hand made work in May and June, but odd Screens and Doors are sold far into September. By keeping this department separate from our regular business we know, when the season is ended, what it has produced.

THE CHICAGO SCALE COMPANY, 296 West Jackson Boulevard, Chicago, suffered considerable loss by fire on the 22d ult., a portion of their building being destroyed. The damage was fully covered by insurance. The company's business was not interrupted but continues as usual, the daily press report having been greatly exaggerated.

INDEXING AND CARING FOR CATALOGUES.

IN answer to the inquiry in *The Iron Age* of March 14 as to the best way of indexing catalogues, a Pennsylvania merchant explains his method, which is as follows:

We have a number of drawers, according to the requirements of our business, numbered from 1 up. Each drawer is devoted to a special line of goods; for instance, No. 1, Blacksmiths' Supplies; No. 2, Painters' Supplies; No. 3, Wagon Makers' Supplies, &c. In an indexed book we enter, in alphabetical order, the name of each firm whose catalogue we have, and after each name we place the number of the drawer in which the catalogue may be found. When a concern makes or handles more than one line, say Blacksmiths' and Wagon Makers' Supplies, we place the catalogue in the drawer representing the line which is most prominent. In this instance it might be Wagon Makers' Supplies, and the catalogue would belong in drawer No. 3. No. 3 would be placed after the name in the index, and the catalogue would be marked 3 A. A second indexed book is used



Numbers on Catalogues in Series of Ten.

for the alphabetical arrangement of the different lines of goods. In this index, after Wagon Makers' Supplies 3 A would be written, indicating that this line could be found in this catalogue in drawer No. 3. After Blacksmiths' Supplies 3 A would also be written, showing that Blacksmiths' Supplies could be found in this catalogue in drawer 3. The next catalogue containing the same lines of goods would be marked 3 B. In the index of firms' names 3 would be placed after the name, indicating that their catalogue is in drawer 3; and in the second index, after the names of the articles, 3 B would be written in addition to 3 A, which had already been placed there. This would indicate, when looking for either Blacksmiths' or Wagon Makers' Supplies, that they would be found in both 3 A and 3 B catalogues. This method would be followed until all the names of the concerns, and the lines of goods are indexed, and the catalogues are filed away in the drawers. Bins or large pigeon holes can be used to file catalogues in, if they are considered more desirable than drawers.

Virginia Merchant's Method.

A merchant in Virginia uses a somewhat similar system to the one already described. He writes:

At present we use nothing more expensive or elaborate than a lot of boxes of suitable sizes. For smaller catalogues we use Horseshoe Nail boxes, which are placed in three or four tiers, one on the top of the others, within easy reach of our desk. Each box is numbered by stenciling large figures on the end. In each box are grouped catalogues whose leading items represent the same class of goods. For instance, catalogues of the prominent manufacturers of Rules would be placed in one box, and with them, possibly, those of Squares, Bevels, Dividers, &c. If there was still plenty of room

catalogues of manufacturers of Pliers, Pincers, &c., might be added.

We then place in a second box another class of catalogues, consisting of Scales, Pumps, Hay Carriers, &c. In another, catalogues of Washing Machines, Washboards, Wringers and kindred goods. We now prepare an indexed blank book in two sections, each section being a complete index. Under A in the first section are entered the following:

Arcade Mfg. Company, Coffee Mills, Door Hangers,	1
Light Hardware.....	1
Anthony Wayne Mfg. Company, Washing Machines	6
American Radiator Company, Radiators.....	3

The numbers refer to the numbers of the boxes in which the several catalogues are to be found. In the second section of the index are entered—taking from the foregoing—under the letter C:

Coffee Mills, Arcade Mfg. Company.....	1
Under W:	

Washing Machines, Anthony Wayne Mfg. Company	6
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Now, whether the item we want or the name of the manufacturer is remembered, we turn to the index book and locate the catalogue almost instantly.

Our correspondent states that he expects to have a cabinet built according to his specifications to displace the boxes, when, he remarks, "we think we will have as perfect a system for indexing catalogues as has yet been devised."

System of a House in Maine.

For a number of years H. H. Crie & Co. of Rockland, Maine, placed catalogues in drawers, and when they had occasion to use them they started with the one at the top, and looked through the lot until they found (or did not find) what they wanted. This method was not, of course, an ideal one, and after giving some attention to the matter they adopted the method described below, which, they advise us, has answered the purpose so well that they have found it unnecessary to modify it after using it about two years.

An alphabetical index, A to Z, 4 x 14 inches in size, was first purchased for 25 cents; then a small pocket ledger with alphabetical index at a cost of 50 cents, and 500 gummed library numbers in perforated sheets, and the firm were ready for business. The 500 or 600 catalogues on hand were looked over and those which, in their judgment, were not of use, were thrown out. The rest of the catalogues were assorted into two piles, those that were large enough to stand on a shelf and those that were smaller.

The smaller ones were put in packages of 25 each with an elastic band around them. These were numbered at the top of the front cover, beginning with No. 501, to be put in drawers.

The larger catalogues were numbered from one up. As most of these were not thick enough to admit placing number on the back, shipping tags were cut into strips about $\frac{1}{2}$ x 2 inches. On one end of these the gummed library numbers were stuck, while the other end was pasted to the catalogue, using good library paste. The strips were allowed to project far enough to show the numbers, placing one above the other in series of 10, as shown in the accompanying illustration.

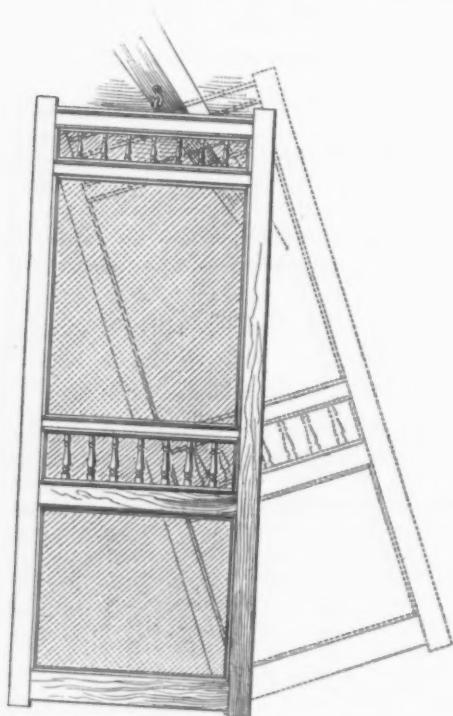
In the alphabetical index the name of each party issuing a catalogue was written in alphabetical order, including both the large and small catalogues. The pocket index was used for recording the articles found in all the catalogues, each under its proper letter. Thus Anvils would be placed under A, Bellows under B, &c. The numbers of catalogues in which the goods could be found were placed after the name of the article. In this way a catalogue could be easily found, as well as the manufacturer of any article shown in the catalogues. When a new catalogue is issued the old catalogue is taken out and a new one is put in its place, thus keeping the numbers complete and in rotation.

It is suggested that if desirable more detail can be gone into in entering up the names of articles. Vises,

for instance, could be entered under V, as Bench, Blacksmiths', Wood Workers', Hand, &c., so that any particular kind could be more readily found.

SAMPLING SCREEN DOORS.

CHASE, BARKER & CO. of Calais, Maine, display samples of Screen Doors as shown in the accompanying cut. In a beam extending across the ceiling a row of cup hooks about 3 inches apart are placed. In the top of each door a screw eye is placed. Eight styles of doors are thus suspended with little sacrifice of space. When a customer wishes to see the different styles the bottom portion of a door is taken hold of and the door is swung out, exposing it to view. This arrangement has been found quite convenient. It is remarked that



Sampling Screen Doors.

If this plan should be used in a store where no beam was available longer hooks would be required for the ceiling and eye bolts for the doors.

THE ECLIPSE MFG. & PLATING COMPANY.

THE ECLIPSE MFG. & PLATING COMPANY, Birmingham, Ala., have just finished their new building. It is of one story, 50 x 140 feet, and is divided into a foundry 50 x 70 feet, a finishing room 25 x 70 feet, electroplating room 25 x 53 feet, the balance of space being taken up by pattern room and office. Their cupola has a capacity of 6 tons of metal per hour. The foundry will be specially devoted to the manufacture of Mantel Hardware and Light Castings, which will be finished in nickel, copper, brass, bronze, or galvanized in the plating department. The plating department will also be run for all kinds of jobbing work, such as gold and silver plating, lacquering and polishing, in addition to the finishing as above. This is said to be the first plant in the South to make a specialty of Light Castings and carrying the same through to a high finish. The establishment is equipped with all the necessary machinery of the latest type. The partners in the company are K. F. Dunlap, formerly of Macon, Ga., and F. N. Andrews, for many years with the Postal Telegraph Company, Birmingham. The superintendent of the plating department is Harry Schutzenhoff, for several years manager of the Detroit Electro Plating Company, Detroit, Mich., and the superintendent of the foundry and pattern shop is Charles A. Manifold.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

Barber & Ross, Eleventh and G streets, N. W., Washington, D. C., are about adding a House Furnishing department to their business, and will be glad to receive price-lists and discount sheets from manufacturers in this line.

The two stores of the Dan Valley Hardware Company, Danville, Va., were destroyed by fire on the evening of April 24, the entire stock being consumed. Under date of the 25th they announce that they will in a few days open up with a new and complete stock of Hardware, Stoves, Agricultural Implements, Harness, &c. Manufacturers will do them a favor if they will send them their latest catalogues and price-lists pertaining to these lines. Fortunately their warehouses were not burned, so that they can fill orders for machinery promptly.

Bewley Hardware Company, Elberton, Ga., have disposed of their Hardware and Mill Supply business to the Elberton Hardware Company, taking effect this month. W. D. Bewley, with L. B. Dawson, also of Elberton, expect to open a Hardware business at Chester, S. C., about July 1, both wholesale and retail. The style will be Bewley Hardware Company. Mr. Bewley would appreciate copies of catalogues, price-lists, &c., from manufacturers, which should be addressed to him at Elberton, Ga.

F. G. Reineck, who has just opened a general Hardware store at 2119 West Twelfth street, Chicago, would be pleased to have copies of catalogues, &c., from manufacturers.

Warner Hardware Company, Minneapolis, Minn., have incorporated for the purpose of conducting a wholesale and retail business at 11 South Fourth street. They will make a specialty of Builders' Hardware and Tools. The officers of the company are Lem C. Warner, president; S. E. Kirk, vice-president, and R. L. Warner, secretary and treasurer. They request catalogues and quotations from manufacturers.

W. P. Hatchett is opening up a Hardware business at West Palm Beach, Fla., and expects to carry a line including Shelf and Builders' Hardware, Boat Hardware, Stoves and House Furnishing Goods, Paints, Oils and Varnishes, Sash, Doors and Blinds, and Plumbing Goods. Mr. Hatchett will be pleased to have catalogues and price-lists from manufacturers of these and kindred goods. W. H. Da Camara, late of De Land, Fla., will manage the business.

ESTEY WIRE WORKS COMPANY.

ESTEY WIRE WORKS COMPANY, long at 65 Fulton street, New York, have moved to 59 Fulton street, where they will have improved and larger facilities in the way of office and display rooms, storage, &c., the latter address being the place where Mr. Estey originally started in business in 1876. This company at their factory, in Brooklyn, N. Y., manufacture Wire Cloth of all kinds, Wire Work such as Office Railings, Brass and Iron Work, Bank, Counter and Floor Railings, Wire Window and Spark Guards, &c. A new departure with them is the manufacture of Wire Fencing, designed more particularly for country residences and suburban homes. It is made of 3-16-inch wire, and being strong and substantial is particularly suitable for fencing lawns and similar grounds. They have just finished a new and expensive machine for producing this fence.

Tomkins Hardware Company, Victor, Col., have purchased the stock and fixtures of the Victor Mine Supply & Hardware Company. The Tomkins Company are wholesale and retail dealers.

WESTLAKE MFG. COMPANY AND SEWING MACHINES.

THE WESTLAKE MFG. COMPANY, Chicago, Ill., are making a determined effort to interest Hardware dealers throughout the country in the handling of Sewing Machines, the demand for which has enormously increased during the last few years. Owing to the great reduction in prices of high grade machines, we are advised, five machines are now sold to one five years ago. The Westlake Company issue a very interesting booklet showing why it pays the Hardware dealer to handle Sewing Machines, and containing many valuable suggestions as to how to make it pay. Their catalogue illustrating the New Home and Kensington Sewing Machines, and the Kensington Bicycles (which they also manufacture), is a very comprehensive one and will interest every dealer. We are informed that the company's business has nearly doubled during the last year, which fact they ascribe to the growing popularity of their machines, and more especially to the exceedingly low prices which they claim they quote. They also furnish electrotypes to dealers for purposes of local advertising, and to aid them in stimulating trade and increasing the demand for their New Home Machine.

PRICE-LISTS, CIRCULARS, &c.

H. H. MAYHEW COMPANY, Shelburne Falls, Mass.: Illustrated catalogue No. 10 of their line of Mechanics' Tools. It represents Screw Drivers, Goodell patent Brace Screw Driver, Goodell Improved Brace, Goodell Improved and Goodell-Hay Ratchet Braces, Goodell Glass Cutters, Double Wheel Cutters, Combined Gauge and Square, Mayhew's Tack Claws, Wood Boring Brace Drills and Double Cut Bits, Gimlets, Bits, Countersinks, Punches, &c.

THOS. MILLS & BRO., 1301-1307 North Eighth street, Philadelphia, Pa.: 1901 catalogue devoted to Ice Cream Manufacturers' Tools, Confectioners' Tools, Bakers' and Cooks' Tools, and Dairymen's and Milkmen's Supplies.

ECONOMY MFG. COMPANY, Syracuse, N. Y.: Catalogue of Hardware Specialties, including Door Hangers, Saw Vises and Economy Little Giant Truck.

ECONOMY FOUNDRY & MACHINE COMPANY, Syracuse, N. Y.: Catalogue D, devoted to their Economy Stable Fittings. They also issue a special illustrated catalogue and price-list of Reservoir Vases and Iron Lawn Furniture, and a separate price-list of Jack Screws, Car Box and Track Jacks, House Raising Screws, &c.

C. E. JENNINGS & CO., 101 Reade street, New York: A series of illustrated descriptive booklets, about 25 in all, which in a terse way give the salient features of various leading Mechanics' Tools made by them. No. 1 refers to the Extension Hack Saw Frame and Saw Blades; No. 2, entitled, "Short and Sharp," describing Jennings' new short blade sharpened Chisel Sets. They will be supplied without cost to the trade, either with the manufacturers' name on or the imprint of the dealer, for circulating and gratuitous distribution.

W. N. DURANT, 237 Twenty-second street, Milwaukee, Wis.: Postal card circular relating to the Durant Counting Machines.

THE AUTOMOBILE & CYCLE PARTS COMPANY, Cleveland, Ohio: Catalogue describing the complete line of Hardware Specialties which they are manufacturing at the Thompson stampings plant at Chicago, and which are sold through Harry Cassady, sales manager of the Thompson department, Chicago. The line includes Curling Irons, Waving Irons, Screw Drivers, Nut Crackers, Tracing Wheels, Towel Racks, Cake Turners, Hat Racks, Tack Pullers, Can Openers, Lamp Chimney Stoves, Glove and Shoe Buttoners, Stove Pokers and other goods.

THE A. A. WOOD & SONS COMPANY, Atlanta, Ga.: Descriptive circular relating to their Wood's New Universal Hollow Auger, which is made entirely of Steel.

AMONG THE HARDWARE TRADE.

O. & R. B. Roos, Yoakum, Texas, have dissolved partnership. R. B. Roos will continue under his own name.

Churchman & Coslet have disposed of their business in Bryan, Ohio, to Bentley & Wogner, who will continue at the old stand.

Creston Hardware Company, Creston, Iowa, were organized on March 5 and regularly opened for business on April 20. The company occupy a commodious building, 24 x 100 feet, three floors, and carry a full line of Shelf and Heavy Hardware, Buggies, Carriages, &c.

O. E. Lang & Co., Mishawaka, Ind., owing to the large increase in their business, are putting up an addition, 40 x 90 feet, brick, two stories, with basement.

Chas. H. Tolle is successor to Track & Tolle in the retail Hardware business in New Boston, Ill.

Willard Larkin at Cobleskill, N. Y., has succeeded A. Marcus.

W. H. Buckley's store at Spring Lake, Mich., was burned out a short time since. Mr. Buckley will rebuild on a larger scale.

Iverson & Miller have succeeded Steensland & Iverson at Hudson, S. D.

Wilcox Hardware Company, Adrian, Mich., wholesale and retail, have lately added a Harness department. They have rearranged their store and improved their facilities for the rapid conduct of business.

R. A. Zoeller has purchased the Hardware and Implement stock of L. C. Terrell at Tarboro, N. C. Mr. Zoeller will also conduct a plumbing and tin shop.

W. H. Farmer has succeeded Farmer & Boals at Rogersville, Mo.

McDowell & Pettigrew have succeeded the Parmenter-McDowell Hardware Company, Cabool, Mo.

M. F. Dougherty has purchased the Hardware stock of Morris & Gould at Hartington, Neb., and will take possession June 15. Morris & Gould will continue in the Farm Machinery and Buggy business.

S. E. Lyon has lately purchased an interest in the Hardware business of Frank Chase, Hoyt, Kan., and the style has been changed to Chase & Lyon.

Jackson Hardware & Implement Company, Van Alstyne, Texas, have been chartered with a capital stock of \$12,000, to conduct a retail business in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods and Queensware.

W. E. Call and Henry Welsert have purchased the Hardware business of Towne & Patterson, Mt. Auburn, Iowa, and will continue under the style of Call & Welsert. The new firm will shortly move to their own building.

G. P. Derickson & Co., wholesale Cabinet Hardware, Minneapolis, Minn., at present at 119 Washington avenue, South, will, about June 1, remove to their new quarters, 121 and 123 Washington avenue, North. The building they will occupy is 44 x 150 feet, four stories and basement, and is equipped with the most modern appliances for handling and shipping goods.

A. MacEachron has purchased the Hardware, Stove and furniture business formerly conducted by Gilbert Henry & Co., Goldfield, Iowa.

A. A. Jones has succeeded the firm of Jones & Watson, Elkhart, Ind., buying the interest of the estate of H. G. Watson.

L. W. Hilliard, Argo, Ill., has lately added a line of Hardware to his other goods.

J. L. McMahon has succeeded West & McMahon, State Center, Iowa, dealers in Hardware, Stoves, Farm Implements, &c. Mr. McMahon will make a number of improvements in the store.

Eaton & Kessler have succeeded Eaton & Sutfin, at Robinson, Ill. They have lately moved into a new three-story building, 20 x 80 feet.

Wiseman Bros. have succeeded C. L. Wiseman, at Rineyville, Ky.

J. S. Miller has purchased the store of J. Davis, at Trampeleau, Wis.

Granite Falls Hardware Company, Granite Falls, Minn., have incorporated, with a capital stock of \$10,000, to conduct a retail business in Shelf Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c.

The store of L. H. Durland, Son & Co., Watkins, N. Y., was recently robbed of about \$250 worth of Pocket Cutlery, Razors, Revolvers, &c.

Minnie & Bromeling, Hardware merchants, Eaton Rapids, Mich., recently suffered damage to the extent of \$300 by an overflow of the Grand River, the water flooding their basement.

F. W. Stearns is successor to C. P. Patterson, at Curlew, Iowa. Mr. Stearns has built an addition, 24 x 40 feet, and doubled the stock formerly carried.

McReynolds & Marshall have succeeded McReynolds & Keach in the Hardware business in La Belle, Mo. The business is strictly cash.

H. P. Sorenson has disposed of his business at Big Falls, Wis., to William Tolzin, who continues at the old stand.

Rounds & Van Camp have succeeded Fox & Rounds, dealers in Hardware, Stoves, Tinware, Paints, Oils, Doors, &c., also plumbing. The new firm have increased the stock thus acquired and have also added a full line of Harness.

Jolly & Flechter have succeeded Cumming & Flechter at Lebanon, Neb.

Lail Kiser & Co. have succeeded E. B. Lane & Co. at Macedonia, Iowa.

J. J. Vander Meer is successor to J. K. Falling, Hardware and Stove merchant, Grand Rapids, Mich.

Fletcher & Kent have succeeded P. H. Sherman, dealer in Hardware, Farm Machinery and furniture, Bradgate, Iowa.

Higgins, Wasgatt Hardware Company have purchased the business of J. F. Wohlhuter & Co., Albert Lea, Minn.

C. L. Cook has bought the Hardware stock of the Millers Falls Plumbing Company, Millers Falls, Mass.

Brocton Hardware & Lumber Company have succeeded C. F. Crandall, Brocton, N. Y.

Miscellaneous Notes.

The Invincible Wedge Plate Hammer.

Wallis, Robinson & Co., 46 Lake street, Chicago, are manufacturing a new hammer, which they have named the Invincible wedge plate hammer. They state that the hammer has an advantage in the patent fastening used in holding the head and the handle together, which

adds very greatly to the strength of the handle. In addition to the regular warranty placed on any first quality nail hammer, the manufacturers guarantee that the handle will not break with ordinary usage. They call attention to the fact that one of the most annoying features in the ordinary nail hammers, that of loose heads, is entirely prevented by this fastening. The wedge plate used in this hammer, it is claimed, positively prevents the head coming loose or flying off the handle. The goods are nicely finished and the faces and claws are fully warranted to be equal to any first quality nail hammers in the market.

Iver Johnson's Arms & Cycle Works' Semi-Hammerless Gun.

In the advertisement of the Iver Johnson's Arms & Cycle Works, Fitchburg, Mass., in our issue of April 25, a mistake occurred in the use of a cut of a single barrel shotgun with top snap, instead of a semi-hammerless gun, to which the text of the announcement referred. The advertisement in its correct form will be observed in this issue. This gun has trigger action, an automatic ejector (improved 1900 model), and can be furnished in gauges 12 and 16, with barrels 30 and 32 inches long, the piece being an ejector or non-ejector, at the option of the sportsman.

The Auto Grindstone.

The Cleveland Stone Company, Cleveland, Ohio, and 283-285 Front street, New York, are offering the double treadle mounted grindstone shown in the accompanying



Fig. 1.—The Auto Grindstone.

cuts. The frame is made of seasoned hard wood and is designed to supply a demand for an extra heavy frame, embracing the bicycle features of the company's Bi-Treadle. It is fitted with their regular detachable fixtures, having ball bearings on both pitman rod and shaft. It has a comfortable saddle and clothes pro-

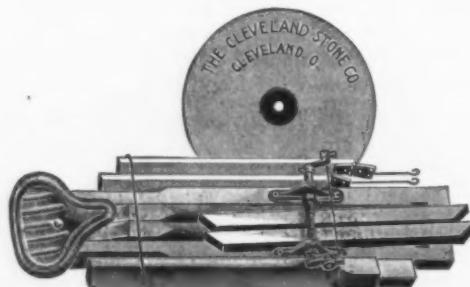


Fig. 2.—Auto Frame Knocked Down.

ector. Each grindstone is turned true to its own axis before mounting. In shipping the frame is knocked down, as illustrated in Fig. 2. Three sizes are made, Nos. 1, 2 and 3, the stones weighing respectively from 100 to 50 pounds, measuring usually from 2 1/4 to 1 1/2 inches in width.

New Designs in Builders' Hardware.

Lockwood Mfg. Company, South Norwalk, Conn., for whom Allerton-Clarke Company, New York and Chicago, are direct representatives, have recently put on the market a series of new designs in builders' hardware for the exterior and interior trim of residential, office and public buildings. A few examples are illustrated

and store doors, as well as push buttons, lifts, pulls, push and letter plates, &c. The company direct especial attention to the Lockwood cylinder locks, which are referred to as of high grade and capable of being master keyed to any given number under the control of one master key, or arranged in groups, each series controlled by a master key and the several groups dominated by one grand master key. The cylinder locks are fitted with



Fig. 1.—Cambridge Design.



Fig. 2.—Marcellus Design.

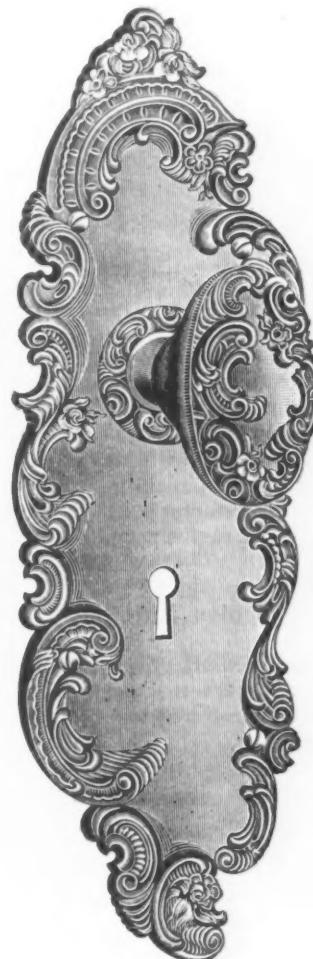


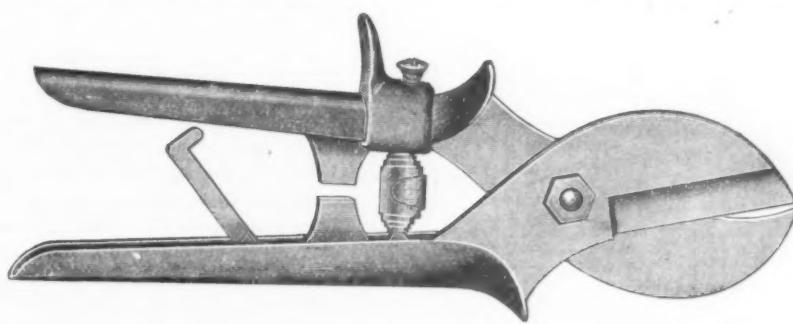
Fig. 3.—Anglure Design.

herewith, out of a total of 15 designs, six of which are entirely new and the remainder but a few months old. Fig. 1 shows the Cambridge design in iron and moderate in price, supplied regularly in six finishes. Fig. 2 illustrates the Marcellus design of the Romanesque school, the base of which is cast bronze, the goods themselves being particularly striking. Fig. 3, the Anglure, a Rococo design, school of Louis XVI, is handsomely executed and hand chased, as is the Chesterfield, not illustrated here, of the Colonial school, having an oval knob and

strong corrugated keys of a peculiar section, which increases security and durability. The product of this company is also marketed through the Hardware Agency Company, Boston, Mass.

Cronk's Pruning Shears.

The Cronk Hanger Company, Elmira, N. Y., have added an adjustable thumb or hand stop to their prun-



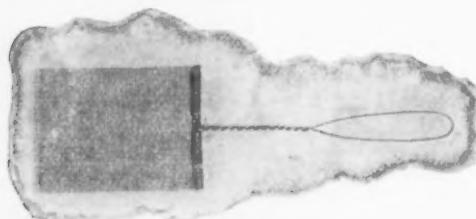
Cronk's Pruning Shears.

escutcheon, with beaded edges on both, there being 29 regular finishes from which to choose. A total of 26 designs are made, and all the finer grades are also furnished with cylinder locks as well as the standard escutcheon here shown. All the designs are carried through the various lock sets for outer and inner doors

ing shears, as shown herewith, which is designed to fit all sizes of hands. It is explained that a large hand would want the stop well back, while a small hand would be obliged to have it close down to the cutting end. The stop being adjustable, allows it to be placed wherever it will fit the hand the best.

The Michigan Fly Killer.

The Michigan fly killer, herewith illustrated, consists of a square piece of double selvedge small mesh blued steel wire cloth, with steel wire handle. The handle furnishes a good grip for the hand and a loop for hanging the article when not in use. The wire cloth is fastened on the handle by a tin hem which is folded round the arms of the handle and the edge of the wire cloth in such a manner as to allow a slight rolling motion



The Michigan Fly Killer.

when in use, thus obviating the danger of breaking the wire cloth at the point of fastening. While the construction is simple, yet it is explained that the article is durably made. Wire cloth, it is stated, is scarcely perceptible to the fly when used for this purpose. These fly killers are put up in attractive and convenient form by the manufacturer, E. Weatherwax, Somerset Centre, Mich. The exclusive sales agent is S. C. French, Marshall, Mich.

Union Automatic Tool Grinder.

The Union Mfg. Company, Buffalo, N. Y., are putting on the market the tool grinder shown herewith. The machine is referred to as being small and compact, so it



Union Automatic Tool Grinder.

can be conveniently kept in the tool chest. The sliding carriage is provided with clamping jaws, while the frame of the carriage is movable in the ball joint to any desired angle by means of the thumb nut. Adjustments for long or short tools are obtained by the frame being thrown backward or forward by means of a thumb screw on the left side. It is explained that the position shown in the

cut is correct, the fingers close up to the edge of the tool. This method makes it convenient to operate the tool across the surface of the wheel and enables the operator to properly control the grinding so as not to heat and draw the temper by undue pressure. The machine is designed to grind chisels, plane irons, &c., and the emery wheel, it is stated, is of the best quality, being made especially for such tools. The machine has a speed of 1500 revolutions per minute, easy motion.

New Winchester Loaded Shell.

The accompanying cut represents a new black powder loaded shell, put on the market by the Winchester Repeating Arms Company, New Haven, Conn. The shell, though bearing the name New Rival, is a brand new shell. It is blue in color and has a solid, gas tight fire proof base, and is made with the Winchester patent corrugated head. The shell will not be sold empty, the company reserving it exclusively for their own loading. It will be loaded in all gauges from 10 to 20. These shells carry the same list prices and discounts as the



New Winchester Loaded Shell.

New Rival shells heretofore loaded by the company, and also the same Winchester load numbers. The New Rival shell, green in color, will still be furnished to the trade empty, it being branded on the head "1901 New Rival."

Molders' Ramming Shovel.

The accompanying cut represents a molders' ramming shovel with a rubber ramming peen, put on the market by the Osborn Mfg. Company, Cleveland, Ohio. A rubber peen is attached to the grip of the shovel by a neat steel stamping. In many foundries, it is remarked, it has been the custom of molders to use a common shovel for ramming, shaving off the grip of the handle so as to give it somewhat the shape of a ramming peen, often causing the handle to give out while the blade is good. The rammer attachment not only saves time for the



Molders' Ramming Shovel.

molder by combining two tools in one, but unnecessary destruction of the shovel handle, and the possibility of delicate patterns being damaged when the common handle is used for this purpose. Shovels equipped with the rammer are made in two grades—the New Century, of solid cast steel, socket strap, with thoroughly seasoned smooth ash handle. The Pro-tek-tor is the other grade, tempered cast steel, selected handles straight grained and thoroughly dry. The ramming shovel has been recently patented.

Lovelace & Kint, Monroeville, Ind., have sold out to J. D. Shifferly, formerly of Lima, Ohio, who will continue at the old stand. The new proprietor has added a full line of Paints to the former stock of general Hardware and Stoves. Mr. Shifferly is also a practical tinner and slater.

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con., Ball Swgld.	\$1.90
B. B. Caps, Round Ball...	\$1.10@1.18
Blank Cartridges:	
22 O. F., #650...	10¢@10¢
38 C. F., #700...	10¢@10¢
22 cal. Rim, #1.50...	10¢@10¢
32 cal. Rim, #2.75...	10¢@10¢
Central Fire...	2¢
Pistol and Rifle...	15¢@15¢
Primed Snells and Bullets...	15¢@15¢
Rim Fire Sporting...	50¢
Rim Fire, Military...	15¢@15¢

Casters—

Bed...	70¢@70¢@10¢
Plate...	75¢@75¢@10¢
Philadelphia...	75¢@75¢@10¢
Boss...	70¢@10¢
Boss Anti-Friction...	70¢@10¢
Martin's Patent (Phoenix)...	45¢
Passey's Anti-Friction...	70¢@10¢@10¢
Standard Ball Bearing...	45¢
Tucker's Patent, low list...	30¢

Cattle Leaders—

See Leaders, Cattle.

Chain—

American Coil, Cash lots:	
5-16 " 6-16 " 7-16 " 8-16 "	3¢ 4¢ 5¢ 6¢
7-16 " 8-16 " 9-16 " 10-16 "	3.5¢ 4.5¢ 5.5¢ 6.5¢
8-16 " 9-16 " 10-16 " 11-16 "	3.5¢ 4.5¢ 5.5¢ 6.5¢
Less than Cask lots add 5¢.	
German Coil, list July 4, '97.	70¢@10¢@10¢
German Halter Chain, list July 26, '97.	80¢@10¢@10¢

Traces, Western Standard:	100 pair
6-5-5, Straight, with ring...	38¢@38¢
6-6-6, Straight, with ring...	38¢@38¢
6-5-5, Straight, with ring...	38¢@38¢
6-5-5, Straight, with ring...	38¢@38¢

Total Traces 2¢ per pair higher than Straight Links.

Trace, Wagon and Fancy Chains, See Trade Report.

Jack Chain, list July 16, '93:

Iron... 50¢@50¢@10¢ |Brass... 60¢@60¢@10¢ |Safety Chain... 70¢@70¢@10¢ |Gal. Pump Chain... 10¢@10¢@10¢ |

Covert Sd. Works:

Breast, Hitching and Rein Chains... 50¢ |

Covert Mfg. Co.:

Breast... 55¢@55¢ |Halter... 55¢@55¢ |Heel... 55¢@55¢ |Hein... 55¢@55¢ |Stallion... 55¢@55¢ |

Oneida Community:

Eureka Coil and Halter... 50¢@50¢@5¢ |Niagara Coil and Halter... 50¢@50¢@5¢ |Niagara Cow Ties... 45¢@45¢@10¢@5¢ |Am. Coil and Halters... 50¢@50¢@5¢@5¢ |Am. Cow Ties... 55¢@55¢@5¢@5¢ |

Wire Goods Co.:

Dog Chain... 50¢@50¢@10¢ |Universal Dis-Jointed Chain... 50¢ |

Chalk—(From Jobbers.)

Carpenters', Blue... gro. 45¢ |Carpenters', Red... gro. 40¢ |Carpenters', White... gro. 35¢ |

See also Crayons.

Chalk Lines—See Lines.**Checks, Door—**Bardsley's... 40¢@10¢@10¢ |Columbo... 50¢@10¢@10¢ |Eclipse... 60¢@60¢@10¢ |**Chests, Tool—**

American Tool Chest Co.:

Boys' Chests, with Tools... 35¢ |Youths' Chests, with Tools... 40¢ |Gentlemen's Chests, with Tools... 30¢ |Farmers', Carpenters', etc., Chests, with Tools... 30¢ |Machinists' and Pipe Fitters' Chests, Empty... 30¢ |C. E. Jennings & Co.'s Machinists' Tool Chests... 30¢ |**Chisels—**Socket Framing and Firmer Standard List... 70¢@70¢@10¢ |Huck Bros... 30¢ |Charles Buck... 30¢ |C. E. Jennings & Co. Socket Fitter No. 10... 60¢@10¢ |C. E. Jennings & Co. Socket Framing No. 15... 50¢ |Swan's... 70¢@50¢@5¢ |L. & L. J. White, Tanged... 30¢@30¢@5¢ |**Tanged—**Tanged Fitters... 40¢@40¢@40¢@10¢ |Buck Bros... 30¢ |Charles Buck... 30¢ |C. E. Jennings & Co. Nos. 10, 15... 25¢ |L. & L. J. White, Tanged... 30¢@5¢ |**Cold—**

Cold Chisels, good quality, lb. 15@15¢

Cold Chisels, fair quality, lb. 11@12¢

Cold Chisels, ordinary, lb. 8@8¢

Chucks—Beach Pat, each \$8.00... 20¢ |Missey's Planer and Milling... 15@20¢ |

Sklinner Patent Chucks:

Combination Lathe Chucks... 40¢ |Drill Chucks, Patent and Standard... 30¢ |Drill Chucks, New Model... 20¢ |Independent Lathe Chucks... 30¢ |Improved Lathe Chucks... 30¢ |Universal Lathe Chucks... 40¢ |Face Plate Jaws... 35¢ |

Standard Tool Co.:

Improved Drill Chuck... 45¢ |Union Mfg. Co.: |Combination... 40¢ |Czar Drill... 30¢ |Gated Scroll... 30¢ |Independent... 40¢ |Union Drill... 30¢ |Universal... 40¢ |Face Plate Jaws... 35¢ |**Clamps—**Adjustable, Hammer... 20¢@20¢@5¢ |Cabinet, Sargent's... 50¢@10¢ |

Carriage Makers', P. S. & W. Co. 40¢@10¢

Carriage Makers' Sargent's... 50¢@10¢ |Cabinet, Parallel... 35¢@10¢ |

Leman's, Utica Drop Forge & Tool Co. 40¢

Co. 40¢@10¢

Saw Clamps, see Vises, Saw Fiers.

Carpenters, Walk—Star Socket, All Steel... \$1.00 net |Star Shank, All Steel... \$1.75 net |

W. & C. Saank, All Steel, 7½ in. 9¢ d.s., \$3.35; 8 in., \$3.40; 9 in., \$3.50.

Cleavers, Butchers'—Foster Bros... 30¢ |New Haven Edge Tool Co.'s... 40¢@10¢ |Fayette R. Plumb... 35¢@10¢@10¢ |P. S. & W... 35¢@10¢@10¢@10¢ |L. & L. J. White... 35¢ |**Clippers—**

Chicago Flexible Shaft Company:

Handy Toilet... 7¢@10¢ |Mascotte Toilet... 8¢@10¢ |Monitor Toilet... 7¢@10¢ |Stewart's Patent... 7¢@10¢ |**Clothes—**

Eagle and Superior 3¢ and 5¢

inch... 70¢@10¢@10¢ |Norway, 3¢ and 5¢ inch... 70¢@10¢@10¢ |**Cloth and Netting, Wire**

—See Wire, dc.

Cocks, Brass—

Hardware list (Globe, Kerosene,

Racking, etc.)... 65¢@10¢ |

Coffee Mills—See Mills, Coffee.

Collars, Dog—Brass, Pope & Stevens' list... 40¢ |Embossed, Gilt, Pope & Stevens' list... 50¢@10¢@10¢ |Leather... 40¢ |**Compasses, Dividers, &c. C.**Ordinary Goods... 70¢@10¢ |Bemis' Call Hdw. & Tool Co.: |Dividers... 65¢ |Calipers, C. I. Patent Inside... 55¢ |Calipers, Double... 55¢ |Calipers, Inside or Outside... 55¢ |Calipers, Wing... 60¢ |**Comptons—**

J. Stevens A. & T. Co. 55¢@10¢

Compressors Corn Shock

J. B. Hughes' 7¢@10¢

Conductor Pipe, Galvanized

Corsets—L. C. L. to Dealers: |Territory. Not nested... Nested. |Eastern... 70¢@7¢@5¢ |Central... 70¢@6¢@4¢ |Southern... 65¢@5¢@4¢ |S. Western... 60¢@4¢@3¢ |**Coolers, Water—**

Nos. 1, 2, 3, 4, 5, 6, 8, 10

Nos. 10, 12, 14, 16, 18, 20

Nos. 20, 22, 24, 26, 28, 30

Nos. 30, 32, 34, 36, 38, 40

Nos. 40, 42, 44, 46, 48, 50

Nos. 50, 52, 54, 56, 58, 60

Nos. 60, 62, 64, 66, 68, 70

Nos. 70, 72, 74, 76, 78, 80

Nos. 80, 82, 84, 86, 88, 90

Nos. 90, 92, 94, 96, 98, 100

Nos. 100, 102, 104, 106, 108, 110

Nos. 110, 112, 114, 116, 118, 120

Nos. 120, 122, 124, 126, 128, 130

Nos. 130, 132, 134, 136, 138, 140

Nos. 140, 142, 144, 146, 148, 150

Nos. 150, 152, 154, 156, 158, 160

Nos. 160, 162, 164, 166, 168, 170

Nos. 170, 172, 174, 176, 178, 180

Nos. 180, 182, 184, 186, 188, 190

Nos. 190, 192, 194, 196, 198, 200

Nos. 200, 202, 204, 206, 208, 210

Nos. 210, 212, 214, 216, 218, 220

Nos. 220, 222, 224, 226, 228, 230

Nos. 230, 232, 234, 236, 238, 240

Nos. 240, 242, 244, 246, 248, 250

Wire, Brown & Sharpe's.....	255	
Wire, Morse's.....	255	
Wire, F. S. & W. Co.....	10&10255	
Climbers—		
Nail, Metal, Assorted, gro. \$1.40@1.75		
Spike, Metal, Assorted gro. \$3.00@5.50		
Nail, Wood Handled, Assorted, gro. \$4.00@4.85		
Spike, Wood Handled, Assorted gro. \$5.00@5.85		
Class, American Window		
Jobbers' List, Sept. 1, 1900.		
Less than Carloads.....	855	
Carloads.....	855	
Glue—Liquid, Fish—		
List A, Bottles or Cans, with Brush.....	574@50%	
List B, Cans (4 pts., pts., qts.).....	584@1.95	
List C, Cans (4 gal., gal.).....	55@1.45	
Glue Pots—See Pots, Glue.		
Grease, Axle—		
Common Grade.....	gro. \$5.00@6.00	
Dixon's Everlasting.....	10 lbs. can. \$35	
Dixon's Everlasting, in bxs. \$7.00@1.00		
1 lb. \$1.20; 2 lb. \$2.00		
Snow Flake:		
1 qt. cans, per doz. \$2.00; 2 qt. \$3.20; 3 qt. \$4.00		
1 gal. cans, per doz. \$6.00; 8 gal. \$16.00; 5 gal. \$24.00		
Grindstones—		
Pike Mfg. Co.:		
Improved Family Grindstones, per in.	\$2.00 8545	
Pike Mower Knife and Tool Grinder, each.....	\$6.00	
Guards, Snow—		
Cleveland Wire Spring Co.:		
Galv. Steel #1000.....	\$9.00	
Copper #1000.....	\$18.00	
Cum Powder—See Powder.		
Hack Saws—See Saws.		
Hafts, Awl—		
gro.		
Peg Patent, Leather Top.....	\$4.90@5.25	
Peg Patent, Plain Top.....	\$3.50@3.75	
Sewing, Brass Ferrule.....	\$1.60@1.60	
Saddlers', Brass Ferrule.....	\$1.55@1.45	
Peg, Common.....	\$1.85@1.35	
Brad, Common.....	\$1.50@1.75	
Halters and Ties—		
Covett Mfg. Co., Web.....	45&95	
Covett Mfg. Co., Jute Rope.....	45&25	
Covett Mfg. Co., Sisal Rope.....	30&25	
Covett's Saddlery Works, 98, list, Web.....	60&105	
Covett's Saddlery Works, Leatherbox 10%		
Covett's Saddlery Works, Jute.....	60&25	
Covett's Saddlery Works, Sisal.....	60&25	
Covett's Saddlery Works, Manila.....	60&25	
Covett's Saddlery Works, Cotton.....	705	
Hammers—		
Handled Hammers—		
Seller's Machinists'.....	50@50&5%	
Seller's Farriers.....	50@50&25%	
Magnetic Tack, Nos. 1, 2, 3, \$1.35, \$1.50, \$1.75.....	40&105	
Pete Stow & Wilcox.....	40@40&105	
Prestic R. Plumbe:		
Plumb, A. E. Nail.....	40@10&7.5%	
Engineers' and B. S. Hand.....	30@10&5%	
Machinists' Hammers.....	60%	
Riveting and Tinner's.....	40@10&7.5%	
Target's U. S. New List.....	40@105	
Heavy Hammers and Sledges—		
2 lb. and under.....	lb. 45c	
3 to 5 lb.	lb. 36c	
Over 5 lb.	lb. 30c	
Wilkinson's Smiths'.....	95c@10c lb.	
Handcuffs and Leg Irons		
See Police Goods.		
Handles—		
Agricultural Tool Handles—		
Axe, Pick, &c.....	60@60@10%	
Hoe Rake, Fork, &c.....	60@60@10%	
Shovel, &c., Wood D Handle.....	50@50@5%	
Cross-Cut Saw Handles—		
Atkins'.....	40@5%	
Champion.....	40@45&10%	
Douston's.....	50%	
Mechanics' Tool Handles—		
Auger, assorted.....	gro. \$2.50@3.50	
Brad Awl.....	gro. \$1.25@2.50	
Chisel Handles:		
Apple Tanged Firmer, gro. ass'd. \$2.25@4.55; large, \$2.50@4.80		
Hickory Tanged Firmer, gro. ass'd. \$1.75@2.20; large, \$3.50@5.70		
Apple Socket Firmer, gro. ass'd. \$1.70@1.85; large, \$3.00@3.25		
Hickory Socket Firmer, gro. ass'd. \$1.60@1.75; large, \$1.75@2.00		
Hickory Socket Framing, gro. ass'd. \$3.50@3.75; large, \$3.65@4.85		
File, assorted.....	gro. \$1.00@1.15	
Hammer, Hatchet, Axe, &c.	60%	
Hand Saw, Varnished, doz. 70@75c		
Not Varnished.....	55@80c	
Plane Handles:		
Jack, doz. 5c; Jack Bolted, 55@60c		
Fore, doz. 55@38c; Fore, Bolted, 70@75c		
Hangers—		
Barn Door, New Pattern, Round Groove, Regular:		
Inch.....	3 4 5 6 8	
Doz.	\$.95 1.50 1.60 1.95 2.45	
Coat and Hat, Wrightsville, 65&10% Harness, Reading List.		70&10@75%
Wire—		
Belt.....	80c	
Wire C. & H. Hooks, 60c@10@60c 10d 5%		
Atlas, Coat and Hat:		
Single Cases.....	45c	
10 Case Lots.....	50&10@10%	
Czar Harness.....	50&10@10%	
Wire Coat and Hat:		
Acme.....	65c	
B. B.	60c	
V. Brace, Chief and Czar.....	60c	
Gem Bright Wire Goods—See Wire.		
Wrought Iron—		
Holdback, Cast Iron, gro. \$8.00@8.25		
Non-Holdback, Cast Iron, gro. \$6.75@7.25		
Spring Hinges—		
Bardisley, Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Sterling.....	60c	
McKinley Mfg. Co.:		
No. 2, Standard \$1.8.....	60&105	
No. 1, Special, \$1.8.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Badger Barn Door.....	50c	
Baggage Car Door.....	50c	
Climax Anti-Friction.....	50c	
Elevator.....	40c	
Express.....	50c@105	
Louisville Parlor Door.....	50c	
Matchless.....	50&105	
Nansen.....	60&105	
Stowell Parlor Door.....	50c	
Railroad.....	50c	
Street Car Door.....	50c	
Steel Nos. 300, 404, 500.....	40&15%	
Wild West.....	50c	
Zenith for Wood Track.....	50c	
Taylor & Boggs Foundry Co.:		
Kiddier's.....	50@50@10%	
Van Wagoner & Williams Hdw Co.:		
American Trackless.....	33&10%	
Wilcox Mfg. Co.:		
Bike Roller Bearing.....	50&105	
C. J. Roller Bearing.....	50&105	
Cycle Ball Bearing.....	50c	
Dwarf Ball Bearing.....	40c	
Ives, Wood Track.....	60&105	
L. T. Roller Bearing.....	60&105	
New Era Roller Bearing.....	50&105	
O. K. Roller Bearing.....	60&105	
Pringle's Wood Track.....	50c	
Richards' Wood Track.....	50c	
Richards' Steel Track.....	50c@105	
Spanner Roller Bearing.....	60&105	
Tandem Nos. 1 and 2.....	60c	
Underwriters' Roller Bearing.....	40c	
Wilcox Auditorium Ball Bearing 20%		
Wilcox Barn Trolley No. 125.....	40c	
Wilcox Fire Trolley, Roller Bearing.....	30c	
Wilcox Le Roy Noiseless Ball Bearing.....	40c	
Wilcox New Century.....	30c@10&10%	
Wilcox Trolley Ball Bearing.....	40c	
Harness Menders—See Menders.		
Harness Snaps—See Snaps.		
Hasps—		
McKinley's Perfect Hasp, gro. doz. 40@10%		
Wrought Hasps, Staples, &c.—See Wrought Goods.		
Hatches—		
Best Brands.....	50@50@10%	
Cheaper Brands.....	50@60@10%	
Notes.—Net prices often made.		
Hay and Straw Knives—		
See Knives.		
Hinges—		
Blind and Shutter Hinges—		
Surface Gravity Locking Blind:		
(Victor; National; 1858 O. P.; Niagara; Clark's Tip; Buffalo.)		
No.	1 2 3 5	
Doz. pair.....	\$0.75 1.45 2.90	
Mortise Shutter:		
(L. & P. O. S. Dixie, &c.)		
No.	1 14 2 34	
Doz. pair.....	\$0.60 55 55 55	
Mortise Reversible Shutter, (Buffalo, &c.)		
No.	1 2 3	
Doz. pair.....	\$0.65 60 55	
Blind and Shutter Hinges:		
Surface Gravity Locking Blind:		
(Victor; National; 1858 O. P.; Niagara; Clark's Tip; Buffalo.)		
No.	1 2 3 5	
Doz. pair.....	\$0.75 1.45 2.90	
Reading's Gravity.....	75@10%	
Sargent's, Nos. 1, 3, 5.....	60c@10%	
Sargent's, Nos. 11 and 18.....	70@10%	
Wrightsville Hd'ware Co.:		
O. S., Lull & Porter.....	50@24%	
Acme, Lull & Porter.....	75@10%	
Queen City Reversible.....	75@10%	
Stenger's Positive Locking, Nos. 1 & 3.....	70@10%	
Shepard's Noiseless, Nos. 30, 55, 55.....	70@10%	
Niagara, Gravity Locking, Nos. 1, 3 & 5.....	75@75c	
1928 Old Pat'n, Nos. 1, 3 & 5.....	75@75c	
Tip Pat'n, Nos. 1, 3 & 5.....	75@75c	
Buffalo Gravity Locking, Nos. 1 & 3.....	75@75c	
Shepard's Double Locking, Nos. 20 & 25.....	75@75c	
Champion Gravity Locking, No. 75.....	80@10%	
Steamboat Gravity Locking, No. 10.....	55@75c	
Pioneer, Nos. 600, 45 & 5%.....	75@75c	
Empire, Nos. 101 & 103.....	70@75c	
W. H. Co.'s Mortise Gravity Locking, No. 2.....	50@10%	
Stanley's Steel Gravity Blind Hinges, # doz. sets \$1.30.....	30@10%	
Gate Hinges—		
Clark's or Shepard's—Doz. sets:		
No.	1 2 3	
Hinges with Latches, \$1.00@2.50 3.85		
Hinges only.....	1.50 1.90 2.90	
Hatches—		
Barn Door, New Pattern, Round Groove, Regular:		
Inch.....	3 4 5 6 8	
Doz.	\$.95 1.50 1.60 1.95 2.45	
Coat and Hat, Wrightsville, 65&10% Harness, Reading List.		70&10@75%
Wire—		
Belt.....	80c	
Wire C. & H. Hooks, 60c@10@60c 10d 5%		
Atlas, Coat and Hat:		
Single Cases.....	45c	
10 Case Lots.....	50&10@10%	
Czar Harness.....	50&10@10%	
Wire Coat and Hat:		
Acme.....	65c	
B. B.	60c	
V. Brace, Chief and Czar.....	60c	
Gem Bright Wire Goods—See Wire.		
Wrought Iron—		
Holdback, Cast Iron, gro. \$8.00@8.25		
Non-Holdback, Cast Iron, gro. \$6.75@7.25		
Spring Hinges—		
J. Bardisley, Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Sterling.....	60c	
McKinley Mfg. Co.:		
No. 2, Standard \$1.8.....	60&105	
No. 1, Special, \$1.8.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
Loose Axle.....	60c	
Rock Bearing.....	60&105	
Lane Bros.:		
Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
Parlor, New Model.....	\$.75	
Parlor, New Champion.....	\$.40	
Barn Door, Standard.....	60&105	
Covered.....	60&10@10&5%	
Special.....	60&105	
Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
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Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		
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Parlor, Ball Bearing.....	\$.40	
Parlor, Standard.....	\$.25	
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Lawrence Bros.:		
Advance.....	60c	
Cleveland.....	60&105	
Crown.....	60c	
New York.....	60c	
Peerless.....	60&105	
Stowell Mfg. and Foundry Co.:		
Acme Parlor Ball Bearing.....	40c	
Atlas.....	50&105	
Bardisley's Patent Checking.....	15c	
Bommer Bros.:		
Chicago Spring Butt Co.:		
Oscillating.....	25c	
Big Twin.....	25c	
Chiasholm & Moore Mfg. Co.:		
Baggage Car Door.....	50c	
Elevator.....	40c	
Railroad.....	55c	
Cronk Hanger Co.:		

Ladies—Melting—

L. & G. Mfg. Co. 60¢
P. & S. W. 40¢@40¢@10%
Reading. 50¢@10%
Sargent's. 40¢@40¢@10%

Lanterns—Tubular—

Regular Tubular. doz. \$1.50@5.00
Side Lift Tubular. doz. \$1.75@5.25
Square Lift Tubular. doz. \$1.75@5.25
Other Styles. 40¢@10¢@10¢@5%

Bull's Eye Police—

No. 1, 2½ inch. \$3.00
No. 2, 3 inch. \$4.00

Latches, Thumb—

Eoggan's Latches. doz. \$1@5.00

Lawn Mowers—

See Mowers, Lawn.

Leaders, Cattle—

Small. doz. 50¢; large. 55¢
Cover Mfg. Co. 45¢@25%

Lemon Squeezers—

See Squeezers, Lemon.

Lifters, Transom—

Solid grip, Payson Mfg. Co. 80¢
R. & E. 45¢

Lines—

Wire Clothes, Nos., 18 19 20
100 feet. \$1.20 \$1.00 1.65
75 feet. 1.80 1.70 1.90
Crown Mills.
Crown Solid Braided Chalk. 35¢@5¢
Mason's, No. 0 to No. 3. 35¢@5¢
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 8. 40¢
Silver Lake Braided Chalk, No. 0. 40¢
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50
W. gr. 30¢

Locks—

Cabinet Locks. 55¢@55¢@7½¢
Door Locks, Latches, &c.—
(Net prices are very often made on
these goods.)

Reading Hardware Co. 40¢
R. & E. Mfg. Co. 50¢
Sargent & Co. 40¢@40¢@10%
Snow's Victor. 50¢@10%

Elevator—

Sowell's. 35¢@5¢

Padlocks—

Wrought Iron. 80¢@80¢@10%
R. & E. Mfg. Co. Wrt. Steel and brass. 50¢
Sash, &c.—
Fitch's Bronze and Brass. 65¢@5¢
Fitch's Iron. 70¢
Ives' Patent. 55¢@65¢
Payson's Signal. 80¢
Reading. 60¢@10¢@20¢

Machines—

Boring—
Without Augera.
Upright. Angular.
Improved No. 8. \$4.25 No. 1 \$5.00
Improved No. 4. 8.75 No. 2 9.38
Improved No. 5. 2.75
Jewell's. 3.50
Millers' Falls. 3.00
National. 5.75
Sewell's, Rice's Pat. 2.50
Swan's, No. 500. 5.10 No. 800 6.45

Hoisting—

Moore's Anti-Friction Differential Pulley Block. 30¢
Moore's Hand Hoist, with Lock Brake. 20¢

Ice Cutting—

Chandler's. 15¢
Wayne American. 80¢@20¢@10%
Western Star, No. 2. 28.00
Western Star, No. 3. 30.00
et. Louis, No. 41. 60.00

Washing—

French. 28.00
Western Star, No. 2. 28.00
Western Star, No. 3. 30.00
et. Louis, No. 41. 60.00

Mallets—

Hickory. 65¢@50¢@5%
Lignumvitae. 65¢@50¢@5%
Tinners', Hickory and Applewood, doz. 50¢@5¢

Mats—

Door—
Elastic Steel (W. G. Co.). 10¢

Mattocks—

See Picks and Mattocks.

Meat Cutters—

See Cutters, Meat.

Milk Cans—See Cans, Milk**Mills—Coffee—**

Enterprise Mfg. Co. 25¢@30¢
National, list Jan. 1. 30¢
Parker's Columbia and Victoria. 60¢@10¢@60¢
Parker's Box and Side. 50¢@10¢@60¢
Swift, Lane Bros. 30¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

see Drawers, Money.

Mowers, Lawn—

Net prices are generally quoted.

Cheap. all sizes, \$1.20@2.10

Good. all sizes, \$1.50@2.75

10 12 14 16-inch

High Grade. 4.50 4.75 5.00

Pennsylvania and Continental. 6.00@10.50¢

Quaker City. 7.0¢@5.5¢

Great American. 7.0¢@5.5¢

Philadelphia.

Style M. S. C. K. T. 7.0¢@5.5¢

Style A, all Steel. 6.0@10¢

Style E, Low Wheel. 6.0@10¢

Style E, High Wheel. 20¢@10¢@5%
Drexel and Gold Coin, low list. 50¢@5%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered.
Last July 20, 1899. 85¢@85¢@10%
Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos. 6 7 8 9 10

A. C. 25¢ 23¢ 22¢ 21¢ 20¢ ... 40¢@25%

Ausdale. 24¢ 23¢ 22¢ 21¢ 20¢ ... 50¢@10%

Capewell. 19¢ 17¢ 16¢ 15¢ 14¢ ... 10¢@25%

C. B. K. 25¢ 23¢ 22¢ 21¢ 20¢ ... 40¢

Champion. 20¢ 19¢ 18¢ 17¢ 16¢ ... 45¢@10%

American, Nos. 5 to 10. 40¢@45¢@40¢@45¢

Jobbers' special brands. per lb. 8¢@9¢

Picture—

1½ 2 2½ 3 3½ in.

Brass Head. 4.00 7.00 9.50 1.00 gro.

Por. Head. 1.10 1.10 1.10 ... gro.

Nippers, See Pliers and Nippers.

Nut Crackers—

See Crackers, Nut.

Nuts—

Cold Punched Off

Mfrs. or U. S. Standard. list.

Hexagon, plain. 5.00¢

Square, plain. 5.00¢

Square, C. T. & R. 5.00¢

Hexagon, C. T. & R. 6.00¢

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stan'd.

Square Blank or Tapped. 5.00¢

Hexagon Blank or Tap'd. 6.00¢

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Mfrs., U. S. or Nar. Gauge Stan'd.

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Mfrs., U. S. or Nar. Gauge Stan'd.

Square Blank or T

Rings and Ringers—						
Bull Rings—						
Steel	\$0.80	2 1/2	3	inch		
Copper	1.10	1.30	1.50	doz.		
Hog Rings and Ringers—						
Hill's Rings	gro. boxes	\$1.50	4.75	doz.		
Hill's Ringers, Gray Iron	doz.	\$5.00	100			
Hill's Ringers, Malleable Iron	per doz					
Blair's Rings	per gro.	\$5.75	6.00			
Blair's Ringers	per doz.	\$0.30	0.30	1.00		
Brown's Rings	per gro.	\$5.00	6.00			
Brown's Ringers	per doz.	\$1.00	1.00			
Rapid Rings	per gro.	\$6.00	6.00			
Rapid Ringers	per doz.	\$3.50	3.50			
Rivets and Burrs—						
Copper	20	50	50	50		
Iron or Steel						
Tinners	70	10	70	10	10	
Miscellaneous	70	10	70	10	10	
Rivet Sets—See Sets.						
Roasting and Baking						
Pans—See Pans, Roasting and Baking.						
Rollers—						
Acme, Stowell's Anti-Friction						50
Farm Door, Sargent's list						50
Cronk's Stay						625
Cronk's Brinkerhoff						625
Lane's Stay						33 1/2
Stowell's Barn Door Stay	per doz.	\$1.25				
Rope—						
Manila, 7-16 in. and larger						
Manila	14-inch	lb. 10 1/2				
Manila, 14- and 16-inch	lb. 11 1/2					
Manila, Tinned Rope, 15	lb. 11 1/2					
thread						
Manila Hay Rope, Medium	lb. 10 1/2					
Seal, 7-16 in. and larger	lb. 8 1/2					
Seal	14-inch	lb. 8 1/2				
Seal	14- and 16-inch	lb. 9 1/2				
Seal, Hay Rope, 8 to 10	lb. 8 1/2					
Seal, Tarred, Medium						
Lath Yarn	lb. 7 1/2					
Cotton Rope:						
Best	14-in. and larger	lb. 14	c			
Medium, 14-in. and larger	lb. 11 1/2					
Com.	14-in. and larger	lb. 9	c			
Jute Rope, No. 1, 14 in.						
and up						
Jute Rope, No. 2, 14 in.						
and up						
Wire Rope—						
Galvanized	25	10	25			
Plain						
Ropes, Hammock—						
Covert Mfg. Co.						45 & 25
Coverd Saddlery Works						60
Rules—						
Bowwood	75	10	10	10	10	75
						10
						10
						10
Ivory	10	10	10	10	10	10
						10
Lufkin's Steel						50 & 10
Lufkin's Lumber						50 & 10
Stanley R. & L. Co.						
Bowwood	75	10	10	10	10	10
						10
Ivory						85 & 10 @ 35 & 10 @ 10
Sad Irons—See Irons, Sad.						
Sand and Emery Paper and Cloth—						
See Paper and Cloth.						
Sash Cords—See Cord, Sash.						
Sash Locks—See Locks, Sash.						
Sash Weights—						
See Weights, Sash.						
Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.						
Saw Frames—						
See Frames, Saw.						
Saw Sets—See Sets, Saw.						
Saw Tools—See Tools, Saw.						
Saws—						
Atkins' Circular						50 & 10 & 10
Atkins' Band						50 & 10 @ 50
Atkins' Cross Cuts						35 & 25
Atkins' Mulay, Mill and Drag						50 & 10
Atkins' One-Man Saw						40
Atkins' Wood Saws						40
Atkins' Hand Compas						40
Douston's Circular Solid and Inserted						50
Tooth						
Douston Band 3 to 14 in. wide						80
Douston 14 to 14						80
Douston Crosscuts						45 & 45 & 10
Douston Mulay, Mill and Drag						50
Douston Framed Woodsaws						35 & 35 & 75
Douston Wood Saw Blades						40 & 40 & 75
Douston Hand Saws, Nos. 12, 19, 9, 16						50
Douston Hand Saws, Nos. 7, 107, 1071						50
3, 1, 0, 00, Combination						30 & 30 & 1
Douston Compass Keyhole						35 & 35 & 75
Douston Butcher Saws and Blades						35 & 35 & 75
C. E. Jennings & Co.'s:						
Back Saws						35
Butcher Saws						35
Compass and Key Hole Saws						25
Framed Wood Saws						40
Hand Saws						35 & 35
Wood Saw Blades						45
Peace Circular and Mill						50
Peace Cross Cuts, List Jan. 1, '90						50
Peace Hand, Panel and Rip						30
Richardson's Circular and Mill						50
Richardson's X Cuts, List Jan. 1, '90						30
Richardson's Hand Acc.						30
Simonds' Circular Saws						35
Simonds' Crescent Ground Cross Cut						35
Saws						
Simonds' One-Man Cross Cuts						40 & 10
Simonds' Gang Mill, Millay and Drag						35
Saws						
Hack Saws—						
Douston Concave Blades						25
Douston Keystone						30
Douston Hack Saw Frames						30

C. E. Jennings & Co's :		
Hack Saw Frames, Nos. 175, 180, 330.	40¢	
Hack Saws, Nos. 175, 180, 330, complete.	40¢	
Griffin's Hack Saw Frames	45¢	
Griffin's Hack Saw Blades	45¢	
Star Hack Saws and Blades	15¢ & 10¢	
Scroll—		
Barnes' No. 7, \$15.	25¢	
Barnes' Scroll Saw Blades	40¢	
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18; with boring attachment, \$30.	20¢	
Lester, complete, \$10.00.	15¢ & 10¢	
Rogers, complete, \$4.00.	15¢ & 10¢	
Scale Beams—		
See Beams, Scale.		
Scales—		
Family, Turnbulls'.	30¢ & 30¢ & 10¢	
Hatch, Counter:		
Platform, 4 lb. by 1/2 oz., doz. \$5.75		
Two Platforms, 8 lb. by 1/2 oz.	doz. \$16.00	
Union Platform, Plain	\$1.75 & \$1.00	
Union Platform, Striped	\$1.85 & \$1.15	
Chatillon's Eureka	25¢	
Chatillon's Favorite	40¢	
Chatillon's Grocers' Trip Scales	50¢	
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.	50¢	
"The Standard" Portables	45¢	
"The Standard" R. R. and Wagon	50¢	
Scrapers—		
Box, 1 Handle	doz. \$3.25 & \$2.75	
Box, 2 Handle	doz. \$3.75 & \$4.00	
Ship, No. 1, doz. \$3.50; No. 2,	\$2.25 & \$2.50	
Adjustable Box Scraper (R. R. & L. Co.)	\$6.00.	30¢ & 10¢
Screens, Window and Frames—		
Bonanza Window Screens	60¢ & 60¢ & 5¢	
Flyer Pattern Window Screen	60¢ & 60¢ & 5¢	
Maine Window Screen Frames	40¢ & 10¢ & 5¢	
Perfection Window Screens	60¢ & 60¢ & 5¢	
Phillips' Window Screen Frames	60¢ & 10¢ & 5¢	
Porter's Extension Window Screens	30¢ & 10¢	
Wabash Spring Adj. Screen	50¢	
Screw Drivers—		
See Drivers, Screw.		
Screws—		
Bench and Hand—		
Bench, Iron, doz. 1 in., \$3.00 & \$3.25;		
1 1/4, \$3.50 & \$3.75; 1 1/4, \$4.00 & \$4.50		
Bench, Wood, Beech, doz. \$3.50 & \$2.75		
Hand, Wood	50¢ & 10¢ & 10¢	
Hand, R. Miss Mfg. Co.	35¢	
Coach, Lag and Hand Rail—		
Lag, Common Point, list Oct. 1, '99.	75¢ & 15¢ & 5¢	
Coach and Lag, Gimlet Point, list Oct. 1, '99.	75¢ & 10¢ & 5¢	
Hand Rail, list Jan. 1, '91.	60¢ & 10¢ & 5¢	
Jack Screws—		
Standard List.	75¢ & 75¢ & 10¢	
Millers Falls.	50¢ & 10¢ & 10¢	
Millers Falls, Roller	50¢ & 10¢	
P. S. & W.	40¢ & \$40 & 10¢	
Sargent.	70¢ & 10¢	
Machine—		
List Jan. 1, '99.		
Flat or Round Head, Iron, 50¢ & 10¢ & 5¢		
Flat or Round Head, Brass	50¢ & 10¢ & 5¢	
Set and Cap—		
Set (Iron or Steel)	70¢ & 10¢	
Sq. Hd. Cap	65¢ & 10¢	
Hex. Hd. Cap	65¢ & 10¢	
WOOD—		
List Jan. 1, 1900.		
Manufacturers' printed discounts:		
Flat Head, Iron	97¢ & 90¢	
Round Head, Iron	85¢ & 87¢ & 1¢	
Flat Head, Brass	85¢ & 87¢ & 1¢	
Round Head, Brass	85¢ & 85¢	
Flat Head, Bronze	75¢ & 80¢	
Round Head, Bronze	72¢ & 77¢ & 5¢	
Drive Screws	37¢ & 20¢	
Scroll Saws— See Saws, Scroll.		
Scythes—		
Grass Scythes:		
Natural Finish	per doz. \$7.25	
Polished Blade	per doz. \$7.75	
Painted or Bronzed	per doz. \$7.50	
Weed and Bush	per doz. \$7.25 & 7.50	
Scythe Snares—		
See Snails, Scythe.		
Seeders—		
Raisin—		
Enterprise.	35¢ & 30¢	
Sets—		
Awl and Tool—		
Brad Awl and Tool Sets:		
Wood Hdle., 10 Awls, doz. \$2.00 & \$2.25		
Wood Hdle., 16 Awls, 6 Tools	doz. \$3.50 & \$3.00	
Aiken's Sets, Awl and Tools:		
No. 20, \$2.00 & \$1.00.	50¢ & 10¢ & 10¢	
Fray's, 10 Awl Hdle., No. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7.	50¢	
Millers Falls, Adj. Tool Hdle., No. 1, \$12; No. 4, \$12; No. 5, \$18	15¢ & 10¢	
Stanley's Excelsior:		
No. 1, \$7.50; No. 3, \$4.00; No. 3, \$3.50.	30¢ & 10¢ & 30¢ & 10¢ & 10¢	
Garden Tool Sets—		
Fr. Madison Rakes, Shovel and Hoe	per doz. \$3.00	
Nail—		
Square	per gro. \$3.50	
Round, Blk. and Pol., assorted	gro. \$1.80 & \$2.50	
Octagon	gro. \$1.25 & \$1.75	
Knurled, Good	gro. \$6.00 & \$6.50	
Buck Brothers	37¢ & 35¢	
Cannon's Diamond Point	5¢ & \$1.12 & \$1.50	
Snell's Corrugated, Cup Pt.	50¢	
Snell's Kaurioid, Cup Pt.	60¢ & 45¢	
Rivet—		
Regular list	70¢ & 70¢ & 65¢	
Saw—		
Aiken's Genuine	\$ per doz. \$5.50 & \$6.00	
Aiken's Imitation	\$ per doz. \$3.00 & \$3.10	
Common, Plain Back	10¢ & 15¢	
Common, Plain Back Shovels	are generally sold by jobbers at \$4.75.	

Washers—	
Leather, Axle—	
Solid.....	.80¢ to 10¢ @ \$55
Patent.....	.85¢ to 10¢ @ \$55
Coil: 1/8 1 1/8 1 1/4 Inch.	11¢ to 16¢ 18¢ 15¢ per 100
Iron or Steel—	
Size bolt..... 5-16 5/8 5/8 5/8 5/8	5¢ to 10¢ @ \$55
Washers..... \$5.50 4.50 3.00 2.50 2.00	10¢ to 15¢ @ \$55
In lots less than one keg add 1/4¢ per lb.—5 lb. boxes add 1/4¢ to list.	
Cast Washers—	
Over 1/4 inch, barrel lots. per lb.....	14¢ to 19¢
Washer Cutters—	
See Cutters, Washer.	
Washing Machines—	
See Machines, Washing.	
Water Coolers—	
See Coolers, Water.	
Wedges—	
Oil Finish..... lb. \$1.90 @ \$1.10	
Weights, Sash—	
Per ton..... \$19.00 @ \$22.50	
Some Foundries make price \$1 @ \$2 lower.	

Well Buckets, Galvanized	
See Pails, Galvanized.	
Wheels Well—	
8-in., \$1.65 @ 1.75; 10-in., \$2.00 @ 2.10;	
12-in., \$2.50 @ 2.75; 14-in., \$4.25 @ 4.40	
Wire and Wire Goods—	
Brt. and Ann., 6 to 9.70¢ to 10¢ @ 70¢ to 10¢	
Brt. and Ann., 10 to 18.73¢ @ 75¢ to 10¢	
Brt. and Ann., 19 to 26.75¢ @ 75¢ to 10¢	
Brt. and Ann., 27 to 36.....	
75¢ to 10¢ @ 75¢ to 10¢ @ 75¢	
Cop'd and Galv., 6 to 9..... 70¢ to 70¢	
Cop'd and Galv., 10 to 13.....	
70¢ to 70¢ to 10¢	
Cop'd and Galv., 18 to 25.....	
75¢ to 75¢ to 10¢	
Cop'd and Galv., 27 to 38.....	
75¢ to 75¢ to 10¢	
Tinned, 6 to 14..... 75¢ to 75¢ to 10¢	
Tinned, 15 to 19..... 70¢ to 70¢ to 10¢	
Tinned, 19 to 26..... 70¢ to 70¢ to 10¢	
Tinned, 27 to 38..... 65¢ to 10¢ @ 70¢	
Annealed Wire on Spools..... 70¢ to 50¢ @ 70¢	
Brass and Copper Wire on Spools.....	
60¢ to 5¢ @ 90¢ to 10¢	
Brass, list Feb. 26, '98..... 25¢	

Copper, list Feb. 26, '96.....	15¢
Cast Steel Wire.....	60¢
Stubs' Steel Wire.....	60¢ to 2¢, 40¢
Wire Clothes Line, see Lines.	
Wire Picture Cord, see Cord.	
Bright Wire Goods—	
List April 1, 1901.....	85¢ to 85¢ to 10¢
Wire Cloth and Netting—	
Galvanized Wire Netting..... 35¢ to 35¢ to 5¢	
Painted Screen Cloth per 100 ft.....	
..... \$1.00 @ 1.10	
Light Hardware Grade:	
2-8 Mesh, Plain (sc. list) sq. ft.....	14¢
2-8 Mesh, Galv. (sc. list) sq. ft.....	2¢
Wire Barb— See Trade Report.	
Wire, Rose— See Rope, Wire.	
Wrenches—	
Agricultural..... 70¢ to 10¢ @ 75¢ to 5¢	
Case lots.....	75¢ to 10¢
Acme..... 60¢ to 10¢	
Baxter's S..... 60¢ to 10¢	
Bull Dog..... 70¢ to 10¢	
Cox's (Genuine)..... 40¢ to 10¢ & 5¢ to 5¢	
Cox's (Mechanics)..... 40¢ to 10¢ & 5¢ to 5¢	
Alligator..... 60¢ to 10¢ & 10¢	
Bemis & Cal's: Adjustable S.....	35¢ to 5¢

Wrought Goods—	
Staples, Hooks, etc., list March 17 '92.....	85¢ to 10¢ @ 85¢ to 5¢
Yokes, Neck—	
Covert Saddlery Works, Trimmed..... 10¢ to 5¢	
Covert Saddlery Works, Neck Yoke	
Centers.....	70¢
Yokes, Ox, and Ox Bows—	
Fort Madison's Farmers & Freighters'.....	
list net	
Zinc—	
Sheet.....	lb 6 1/2¢ to 7¢

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oll.....	7 1/2¢ to 9¢
Lead, American White, in Oll.....	7 1/2¢ to 9¢
Lead, White, in oil, 25 lb. tin	7 1/2¢ to 9¢
pails, add to keg price.....	1¢
Lead, White, in oil, 19 1/2 lb. tin	7 1/2¢ to 9¢
pails, add to keg price.....	1¢
Lead, White, in oil, 1 to 5 lb. as sorted tins, add to kg price.....	1¢
Lead, White, Dry in bbls..... 5 1/2¢ to 8¢	
Lead, American, Terms: On lots of 500 lbs. add over, 60 days, or 2¢ for each if paid in 15 days from date of invoice.	
Zinc, American, dry..... 7 1/2¢ to 9¢	
Zinc, Paris, Red Seal, dry..... 6 1/2¢ to 8¢	
Zinc, Paris, Green Seal, dry..... 6 1/2¢ to 8¢	
Zinc, Antwerp, Red Seal, dry..... 6 1/2¢ to 8¢	
Zinc, Antwerp, Green Seal, dry..... 6 1/2¢ to 8¢	
Zinc, V. M. French, in Poppy Oil, Green Seal.....	
Lots of 1 ton and over..... 12 1/2¢ to 15¢	
Lots of less than 1 ton..... 12 1/2¢ to 12 1/2¢	
Zinc, V. M. French, in Poppy Oil, Red Seal: Lots of 1 ton and over..... 10¢ to 11¢	
Lots of less than 1 ton..... 11 1/2¢ to 12¢	
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2; 25 bbls., 2 1/2; 50 bbls., 4%.	

Dry Colors.

Black Carbon.....	7 1/2¢ to 8¢
Black, Drop, Amer.....	4 1/2¢ to 7¢
Black, Drop, Eng.....	7 1/2¢ to 11¢
Black, Ivory.....	12 1/2¢ to 21¢
Lamp, Com.....	4 1/2¢ to 6¢
Hue, Celestial.....	7 1/2¢ to 8¢
Hue, Chinese.....	30¢ to 35¢
Blue, Prussian.....	28¢ to 34¢
Blue, Ultramarine.....	4 1/2¢ to 30¢
Brown, Spanish.....	12 1/2¢ to 15¢
Brown, Vandyke, Inner.....	12 1/2¢ to 15¢
Brown, Vandyke, Foreign.....	9 1/2¢ to 12¢
Carmine, No. 40.....	7 1/2¢ to 20¢ to 27¢
Green, Chrome, ordinary.....	5¢ to 6¢

Green, Chrome, pure.....

Lead, Red, bbls, 1/2 bbls, and kegs: Lots 500 lb. or over.....	10¢
Lots less than 500 lb.	6¢
..... 1/2 bbls and kegs: Lots 500 lb. or over.....	6 1/2¢
Litharge, bbls, 1/2 bbls and kegs: Lots 500 lb. or over.....	6¢
..... 1/2 bbls and kegs: Lots less than 500 lb.	6 1/4¢
Ocher, French, Washed.....	1 1/2¢ to 2 1/2¢
Ocher, Dutch, Washed.....	4 1/2¢ to 5¢
Ocher, American.....	7 1/2¢ to 15¢
Orange Mineral, English.....	8 1/2¢ to 11¢
Orange Mineral, French.....	11 1/2¢ to 11¢
Orange Mineral, German.....	8 1/2¢ to 9¢
Orange Mineral, American.....	8 1/2¢ to 8¢
Red, Indian, English.....	4 1/2¢ to 8¢
Red, Indian, American.....	8 1/2¢ to 8¢
Red, Turkey, English.....	4 1/2¢ to 6¢
Red, Tuscan, English.....	7 1/2¢ to 10¢
Red, Venetian, Amer. 7 1/2¢ to 10¢	80¢ to 1.75
Red, Venetian, English, 7 1/2¢ to 10¢	1.80 to 3.00
Sienna, Italian, Burnt and Powdered.....	7 1/2¢ to 8¢
Sienna, Ital, Raw, Powd.....	1 1/2¢ to 2 1/2¢
Sienna, American, Raw.....	1 1/2¢ to 2 1/2¢
Talc, French.....	7 1/2¢ to 10¢
Talc, American.....	90¢ to 1.10
Terra Alba, French, 7 1/2¢ to 10¢	95¢ to 1.00
Terra Alba, English.....	95¢ to 1.00
Terra Alba, American No. 1.....	95¢ to 1.00
Terra Alba, American No. 2.....	95¢ to 1.00
Umber, Turkey, Bkt. & Powd. 7 1/2¢ to 10¢	95¢ to 1.00
Umber, Turkey, Bkt. & Powd. 7 1/2¢ to 10¢	95¢ to 1.00
Umber, Bkt. Amer.....	10¢ to 12¢
Umber, Raw, Amer.....	10¢ to 12¢
Yellow, Chrome.....	10¢ to 25¢
Vermillion, American Lead.....	10¢ to 20¢
Vermillion, Quicksilver, bulk.....	67¢ to 72¢
Vermillion, Quicksilver, bags.....	67¢ to 72¢
Vermillion, English, Import.....	80¢ to 95¢
Vermillion, Chinese.....	1.00 to 1.20
Black, Lampblack.....	13¢ to 14¢
Blue, Chinese.....	36¢ to 40¢
Blue, Prussian.....	82¢ to 93¢
Blue, Ultramarine.....	13¢ to 16¢

Colors in Oil.

Black, Lampblack.....	13¢ to 14¢
Blue, Chinese.....	36¢ to 40¢
Blue, Prussian.....	82¢ to 93¢
Blue, Ultramarine.....	13¢ to 16¢

Brown, Vandyke.....

Brown, Vandyke.....	9 1/2¢ to 13¢
Green, Chrome.....	10¢ to 12¢
Sienna, Paris.....	10¢ to 12¢
Sienna, Raw.....	10¢ to 12¢
Sienna, Burnt.....	10¢ to 12¢
Umber, Raw.....	9 1/2¢ to 12¢
Umber, Burnt.....	9 1/2¢ to 12¢

Miscellaneous.

Barytes, Foreign, 7 ton.....	\$19.00 to \$21.00
Barytes, Amer. floated.....	19.00 to 20.00
Barytes, Crude.....	9.00 to 10.00
Chalk, in bulk.....	2.00 to 3.00
Chalk, in bbls.....	1.00 to 1.50
China Clay, English.....	12.00 to 17.50
Cobalt, Oxide.....	1.00 to 2.00
Whiting, Common.....	40¢ to 60¢
Whiting, Gilders.....	45¢ to 65¢
Whiting, extra Gilders.....	55¢ to 65¢

Putty.

In bulk.....	\$1.60
bladders.....	2.25
In cans, 12 lb. to 25 lb.....	2.25
In cans, 1 lb. to 5 lb.....	2.25

Spirits Turpentine.

In Southern bbls.....	36¢ to 36 1/2¢
In machine bbls.....	38¢ to 37¢

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....	7 gal. 61¢ to 62¢
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Linseed, City, boiled.....

Linseed, State and West'n, raw.....	5¢ to 6¢
Linseed, raw Calcutta seed.....	5¢ to 6¢
Lari, Prime.....	70¢ to 71¢
Lard, Extra No. 1.....	50¢ to 55¢
Lard, No. 1.....	41¢ to 43¢
Cotton-seed, Crude.....	8 1/2¢ to 9 1/2¢
Cotton-seed, Summer Yellow, prime.....	35¢ to 38¢
Cotton-seed, Summer Yellow, off grades.....	33¢ to 35¢
Sperm, Crude.....	4¢ to 5¢
Sperm, Natural Spring.....	4¢ to 5¢
Sperm, Bleached Spring.....	4¢ to 5¢
Sperm, Natural Winter.....	61¢ to 62¢
Sperm, Bleached Winter.....	64¢ to 65¢
Whale, Crude.....	4¢ to 5¢
Whale, Bleached Winter.....	45¢ to 47¢
Menhaden, Crude, Sound.....	28¢ to 29¢
Menhaden, Light Strained.....	32¢ to 33¢
Menhaden, Bleached Winter.....	33¢ to 34¢
Tallow, prime.....	53¢ to 55¢
Cocoanut, Ceylon.....	54¢ to 56¢
Cocoanut, Cochinchin.....	64¢ to 65¢
Cod, Domestic.....	33¢ to 34¢
Cod, Newfoundland.....	35¢ to 37¢
Red Plaice.....	34¢ to 35¢
Red Saponified.....	75¢ to 76¢
Olive, Italian, bbls.....	62¢ to 67¢
Neatsfoot, prime.....	52¢ to 54¢
Palm, prime, Lagos.....	75¢ to 80¢

Mineral Oils.

Black, 20 gravity, 25¢ to 30¢ cold test.....	7 gal. 95¢ to 101¢
Black, 29 gravity, 15¢ cold test.....	108¢ to 111¢
Black, summer.....	94¢ to 95¢
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CURRENT METAL PRICES.

MAY 1, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—
Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ $\frac{1}{2}$ lb; Square, 0.8¢ $\frac{1}{2}$ lb
1 to 1½ in. round and square, 1.75¢ $\frac{1}{2}$ lb
1½ to 4 in. x ¾ to 1 in., 1.80¢ $\frac{1}{2}$ lb
1½ to 4 in. round and square, 1.90¢ $\frac{1}{2}$ lb
1½ to 4 in. x ¾ to 1 in., 2.00¢ $\frac{1}{2}$ lb
Rods—4 and 11-16 round and square, 2.15¢ $\frac{1}{2}$ lb
Angles: 8 in. and larger, 2.10¢
8 to 3½ in. x 8-16 in., 2.10¢
10 to 12 in. x 8-16 in., 2.10¢
12 in. x 8-16 in. and thicker, 2.10¢
1 to 1½ in. x 8-16 in., 2.20¢
1 to 1½ in. x 8-16 in., 2.30¢
1 to 1½ in. x 8-16 in., 2.40¢
1 to 1½ in. x 8-16 in., 2.50¢
1 to 1½ in. x 8-16 in., 2.50¢
1 to 1½ in. x 8-16 in., 2.50¢
1 to 1½ in. x 8-16 in., 2.50¢
Tees: 1 in., 2.60¢
1½ in., 2.40¢
1½ in. and larger, 2.30¢
Beams: Channels 8 in. and larger, 2.25¢
Bands—14 to 6 x 8-16 to No. 8, 2.20¢
"Burden's Best" Iron, base price, 2.15¢
Burden's "H. B. & R." Iron, base price, 2.05¢
"Ulster," 2.80¢
Norway Bars, 4¢ $\frac{1}{2}$ lb
Norway Shapes, 4¢ $\frac{1}{2}$ lb

Merchant Steel from Store—

Bessemer Machinery, 1.00 to 1.05¢
Tee Calk, Tire and Sleigh Shoe, 3.00¢ $\frac{1}{2}$ lb
Best Cast Steel, base price in small lots, 75¢
Best Cast Steel Machinery, base price in small lots, 8¢

Soft Steel Sheets—
Sheet Iron from Store.
Black.

One Pass C. R. Soft Steel, 2.70¢
No. 14 to 16, 2.80¢
No. 18 to 21, 2.90¢
No. 22 to 24, 2.95¢
No. 25 and 26, 3.00¢
No. 27, 3.10¢
No. 28, 3.20¢

Russia, Planished, &c. Genuine Russia, according to assort-ment, 10¢ $\frac{1}{2}$ lb
Patent Planished, 2.80¢ $\frac{1}{2}$ lb, 8¢ $\frac{1}{2}$ lb, net.
Galvanized, 87¢ $\frac{1}{2}$ lb

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢
No. 28, 2.60¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

No. 10 to 16, 2.20¢
No. 17 to 21, 2.30¢
No. 22 to 24, 2.35¢
No. 25 to 26, 2.40¢
No. 27, 2.50¢

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